

PROBLEMS IN BUSINESS ECONOMICS

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PREFACE

THE course in advanced Business Economics given in the Harvard Business School seeks to demonstrate the importance, in the forming of executive judgments, of generally accepted economic principles, and especially those economic principles developed in recent studies of the business cycle. Most of the cases and problems presented in this book were gathered by the Harvard Bureau of Business Research for the use of that course; very generally they concern decisions which business men have made since the armistice.

For introductory discussion on the business cycle I have drawn freely on the publications of the Harvard University Committee on Economic Research, and especially upon the writings of Professor Warren M. Persons. I am indebted to Professor Charles J. Bullock, the chairman of that committee, and to Professor Persons for permission to present much of the materials contained in Parts I and III. Each of these introductory chapters on the "Business Cycle" (Part I) makes reference to cases or problems in Part II, which clearly present the important issues raised in the chapter.

Part III contains important statistical series, together with a simplified explanation of the statistical methods devised by Professor Persons and employed by the Harvard Committee in its work. This was prepared by the statistician of the Committee, Professor W. L. Crum, for the use of subscribers to the Harvard Economic Service who might be desirous of comparing statistical series of their own business with the curves of the Harvard Index Chart. This explanation is here included in order that teachers desiring to add laboratory or report work to the requirements of a course in Business Cycles or Business Economics may have a non-mathematical explanation of Professor Persons' methods to place in the hands of their students. It should also be of value to business men desiring to compare the movements of their business with the general business cycle. A more complete explanation appears in Professor Persons' fundamental work, *Indices of General Business Conditions*,

which is published by the Harvard University Committee on Economic Research. In the opinion of the present writer, that volume, together with the *Review of Economic Statistics*, of which Professor Persons is editor, and the *Weekly Letters* of the Harvard Economic Service, should be available for the use of students working in the field of business economics and for the use of business men seeking to use the economic principles explained in Part I in the consideration of problems of business policy.

The members of the Staff of the Bureau of Business Research whose work developed the materials here presented include Edward E. Allen, Jr., Frederick M. Bundy, Edward T. Herndon, Richard N. Johnson, Frederick D. Moore, William C. Rugg, J. Riddick Sanderlin, and Theodore C. Streibert. Practically all of the cases and problems were gathered by them, under the supervision of Mr. Charles D. LaFollette. To Dean Donham, to Professor Copekand, director of the Bureau, and especially to Miss Mary E. Osgood, its executive secretary, my thanks are due for help in the preparation of the outline which constituted the basis of the work of the Research Staff. To Mr. Seymour L. Andrew, chief statistician of the American Telephone and Telegraph Company, I am indebted for permission to present the Index of General Business Activity developed in his office, and to Professor Allyn A. Young for permission to reproduce the material from the latest edition of Professor Richard T. Ely's *Outlines of Economics*, to which he contributed the chapter on "Business Cycles." Miss E. F. Philbrook, of the staff of the Bureau of Business Research, gave most valuable assistance in the reading of the proof.

HOMER B. VANDERBLIET

Cambridge, Massachusetts, June 21, 1924

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Figure 1: *Frontispiece*
Business conditions and money rates since the Civil War

PROBLEMS IN BUSINESS ECONOMICS

PART I

THE BUSINESS CYCLE

THE BUSINESS CYCLE¹

A. THE PHASES OF THE BUSINESS CYCLE

THE course of business is not purely fortuitous or haphazard, nor are major price movements accidental. {Depressions pave the way for business revivals; revivals develop into booms; booms breed crises; and crises run out into depressions.} This round of changing conditions—known as the business cycle—constitutes one of the most persistent phenomena of the commercial world. Prices rise and fall; markets expand and contract; production increases and decreases; orders accumulate beyond capacity and then suddenly seem to vanish altogether. When commodity prices reach their peak, business is on the verge of collapse; and when they hit bottom, business is on the threshold of recovery. Thus, management always faces the problem of dealing with new and changing business conditions.

An examination of the frontispiece reveals strikingly the well-defined ebb and flow of prosperity and depression since 1877. It reveals also that intimate relationship between conditions in general business and the movement of interest rates.² In periods of increasing business activity, interest rates advance; in periods of depression they decline. A crisis is marked by the continued advance of money rates, after the downturn of business has begun.

Indeed, money conditions reflect the fundamental soundness or unsoundness of the general business situation itself. When trade expansion has been upon a generally unsound basis, the shock of subsequent price declines and loss of confidence results

¹This discussion of the business cycle is largely adapted from *The Harvard Index of General Business Conditions: Its Interpretation* and other publications of the Harvard University Committee on Economic Research. The principal publications of that committee, the *Weekly Letters* of the Harvard Economic Service and the *Review of Economic Statistics*, are hereafter cited as *Letters* and *Review* respectively.

²The chart of money rates is reproduced from the *Review*, prel. vol. 5, p. 28. For the table of original data from which the corrected rates appearing on the chart were calculated, see Table E-1, Chapter XII, p. 622.

in a hardening of money rates. The recession in business checks the regular flow of payments in commercial transactions and causes loans to become frozen in appreciable amounts. This condition, in turn, increases the demand for funds, since the freezing of old loans necessitates additional credit for carrying on current business. These are the usual developments in the money market when an unsound business situation is subjected to strain. Their appearance in 1884, 1887, 1890, 1893, 1896, 1903, 1907, 1910, 1913, and 1920, resulted in an unusual tightness of the money market. (Frontispiece.) The panic conditions which developed in 1884, 1893, and 1907 are shown by the sharp rise of the curve for interest rates in those years;¹ while the protracted period of liquidation made possible by the Federal Reserve System is reflected by the sustained high level of money rates during 1920-1921.²

There are five well-defined phases of the business cycle. These phases usually occur in the same order: (1) Depression; (2) Recovery; (3) Prosperity; (4) Financial Strain; (5) Crisis. Each phase develops gradually into the following and is distinguished by characteristic movements in the speculative, business, and money markets.

Depression (phase 1) has, as a legacy from the preceding period of liquidation, low prices of securities and small volume of speculation, depressed commodity prices and sluggish business activity, declining rates on commercial paper and increasing bank reserves. With marked dullness in speculation and business, the demand for credit slackens to a point which results in an accumulation of large quantities of money in the banks of the country. These funds seek an outlet in the security markets through the purchase of stocks and bonds which are now fluctuating around their lowest levels in the cycle. Idle money, therefore, is drawn into the speculative market to purchase high-grade bonds, high-grade stocks, and the lower-grade stocks in the order named, and an upward movement in security prices and speculative activity is under way.

¹See O. M. W. Sprague, *History of Crises under the National Banking System*, (prepared for the National Monetary Commission, Sen. Doc. No. 538, 61st Congress, 2nd Session); and Alexander Dana Noyes, *Forty Years of American Finance*, for discussions of these panics, their causes and results.

²See *Letters*, vol. 3, p. 37.

After this upward swing in speculation has been in progress for several months business lifts its head from the depths of depression, commodity prices begin to advance, and business enters the second phase of the cycle, *recovery*. This phase is characterized by advancing security prices, usually a strong bull market in stocks, rising commodity prices, and increasing business activity. Presently, however, the demands of speculation for funds to finance heavy stock-market operations while prices of stocks are rising, and the increasing demands of business for funds to facilitate industrial expansion, cannot both be granted to the degree desired and money rates begin to harden under the pressure of the demand for credit. At this point business passes into phase 3 of the cycle, *prosperity*.

Expanding business is now competing for funds aggressively, and speculation must give way. Manufacturers and dealers in commodities are the year-in and year-out customers of our banks and if shortness of funds makes discrimination necessary such discrimination must be in favor of business men and against speculators. The withdrawal of funds by the banks from the speculative market to finance business men, whose needs grow as commodity prices continue to advance, results in the culmination of the upward swing in security prices which began in phase 1, *business depression*.

This situation eventually leads to phase 4 of the business cycle, *financial strain*, the chief characteristics of which are high credit tension and more or less drastic liquidation in security markets. Money rates continue at a high level, the reasons for which are clear enough when the relation of industrial conditions and credit are considered. Business activity and commodity prices are now fluctuating around their highest levels in the cycle. There is considerable speculation in commodities and a large volume of forward buying which results in the accumulation of heavy inventories at greatly inflated prices. Railroad congestion, by slowing down deliveries, postpones collections and the prompt payment of bank loans. Unusual pressure is placed upon the money market because of the demand for credit to finance industry under the conditions which prevail. This situation is further aggravated by increasing production costs which, as the result of continued wage advances

and rapidly declining labor efficiency, are now advancing out of proportion to selling price.

Doubt begins to arise concerning the willingness or even the ability of the banks to grant further accommodations in support of an unhealthy business structure. Banks are pressing their customers for the liquidation of loans. Business men, therefore, begin to make price concessions, with the hope of improving their cash position. Such concessions (coming at the peak of prosperity) cause business men to wonder whether the turn of the tide has not been reached. The expectation of lower prices encourages cancelations; inventories become frozen; the renewal of loans becomes necessary. Money rates continue to harden because of the demand for credit by business men to satisfy the banks and other creditors who are pressing for payment. The belief that the upswing in business which began in phase 2 of the cycle, *recovery*, has culminated, thus spreads. The prevailing price level no longer attracts buyers and price concessions become the ruling factor of the day. A major downward movement of commodity prices and business activity is thus ushered in, and business passes into the fifth and final phase of the cycle, *crisis*.

The crisis phase of the cycle is characterized by continued liquidation in security markets and by more or less drastic liquidation in commodity markets, the intensity of the latter movement being governed largely by the degree of credit tension. If liquidation takes place gradually we have an industrial crisis similar to those of 1903 and 1910. Money strain may be so great, however, and liquidation so drastic, as to result in a repetition of the business experiences of 1907 and 1920. In 1907 there was a panic of severe proportions, but in 1920 a protracted period of liquidation without the development of a panic.

Following the crisis, which generally runs its course in a few months, business is again in phase 1, *depression*, characterized by the closing of factories, wide-spread unemployment, and depressed business conditions. This is the period of declining money rates, low security prices, and declining commodity prices. At this point the cycle begins all over again.¹

¹ For a more detailed discussion of the phases of the business cycle, see *Business Cycles* by Wesley C. Mitchell, which "offers an analytical description of the complicated processes by which seasons of business prosperity, crisis, depression and revival come about in the modern world." (Preface).

B. CAUSES AND EFFECTS OF BUSINESS CYCLES¹

Older Theories of Crises. Long before the cyclical character of the movement of business activity had been noted, *crises* had attracted attention as frequently recurring phenomena of economic life. Crises generally come as sharp interruptions of periods of business prosperity, when credit has been relatively abundant, prices and profits relatively high, markets good, and employment plentiful. They are of all degrees of severity, but generally are characterized by a scarcity of bank credit, sluggish markets, a sudden drop in prices, bankruptcies, a subsequent period of business depression, lack of employment for wage earners and kindred symptoms.

The earliest explanations of crises attributed them to psychological factors. They were thought of as inevitable reactions to ebullitions of contagious speculative "mania," such as the "tulip mania" of 1636 in Holland, and the South Sea and Mississippi "bubbles" of 1720 in England and France. Even today there are many who turn to psychology for an explanation of crises and, in fact, of the whole business cycle. Thus a crisis is often attributed to a "loss of business confidence," following, perhaps, upon a period of "overconfidence." The only thing necessary at any time, then, to move business out of the doldrums would be a "restoration of confidence." There is no denying that psychology has much to do with the business cycle. An undue degree of optimism may lead to an overdoing of business expansion, and thus perhaps bring about its ultimate wrecking. Pessimism, expressed in timidity or undue caution, may deepen or prolong the depression following upon a crisis. But why should there be this fairly regular rhythmic alternation of optimism and pessimism in business? Back of men's opinions respecting the state of business, most students are agreed, economic forces of a quasi-mechanical rather than a psychological order are at work.

Another popular theory of crises attributes them to *over-production*. Here again our objection is not so much that the theory is necessarily untrue, as that it is vague and superficial. It cannot be disposed of by arguing, as economists at one time were prone to do, that *general overproduction* is impossible.

¹From *Outlines of Economics* by Richard T. Ely, Thomas S. Adams, Max O. Lorenz, and Allyn A. Young; copyrighted by the Macmillan Company; reprinted by permission.

There is a sense, undoubtedly, in which the supply of any one good may be construed to be a demand for other goods, so that in a large and abstract way it may be held that demand necessarily increases with supply. But this abstract view holds small comfort for the nation, which, like Chile in the years following the World War, finds the world overstocked with its principal export product (nitrate, in Chile's case). It holds small comfort, too, for cotton and wheat growers in years when crops are too large or markets too poor to afford profitable prices, for merchants who find themselves overstocked, or for manufacturers who find that they and their competitors have overequipped themselves with factories and machines. Overproduction may often be, in fact, nothing else than *maladjusted* or badly balanced production. Or—since goods are not directly exchanged for goods, but sold for money—it may appear in the form of an aggregate industrial output too large for consumers to purchase at prices profitable to the producers.

The socialists, from Robert Owen (1815) down to Karl Marx and his followers, have given a characteristic twist to the over-production theory of crises. Production under machine methods, they hold, tends always to increase faster than the consuming power of the great mass of the people, for most consumers are wage-earners whose incomes, according to socialistic doctrine, are determined, not by the value of what they produce, but upon the minimum upon which they can live. Capitalistic methods of production thus yield a *surplus product*, and at any given time an even larger surplus product is always possible. The surplus product accumulates in the market and leads periodically to crises. The demand for luxuries on the part of the "capitalist employers" affords an outlet for a part, but only a small part, of the surplus product. The employers want profits and power even more than they want luxuries. Crises, in the opinion of the socialists, are not the only ills for which the surplus product is responsible. Endeavors to find an outlet for it, they hold, lead to economic rivalries among nations, to the exploiting of undeveloped or backward countries, to colonial expansions—in short, to "economic imperialism" and to wars.

Despite the absurdities of the notions respecting prices and wages upon which it rests, the socialistic theory of crises, like others of the older theories, contains a germ of truth. In periods

of advancing prices and profits, wages, in fact, lag behind, and, beyond much doubt, this fact has its significance in the explanation of the economic cycle. But the socialists are clearly wrong in holding that there is a continuous and irresistible tendency to overproduce, interrupted and halted from time to time by crises. Business men gage their productive activities, not by the maximum possibilities of modern machine methods, but according to their estimates of the market for their goods. If they overproduce, or if the productive capacity of their plants becomes too large, it is because their estimates are wrong, not because production or productive capacity grows spontaneously of its own accord. To explain a crisis, or the business cycle of which a crisis is a part, we must explain why business men in general prove, from time to time, to be mistaken.

Cycles and the Weather. Business cycles vary in length. The range of variation, however, is not so great but that it suggests the possible presence of some definite periodic element. This, in turn, has suggested to various observers that one or another of the periodic forces of nature may be at work. In various phenomena, such as the seasons, the tides, and different types of vibratory motion, nature displays a rhythmic periodicity. On the assumption that the business cycle has a fairly normal period—an assumption not yet verified, and, on the whole, doubtful—it would by no means be unreasonable to look to external natural forces for its controlling causes.

The first important suggestion of this sort came from the brilliant English economist, W. S. Jevons, whose "sunspot theory" of crises was a courageous if unfruitful attempt to reach a scientific solution of an important problem. The variations in the proportion of the sun's surface covered by spots have long been thought to have some connection with meteorological phenomena. Jevons thought that the average interval between maximum sunspot areas (about eleven years) coincided with the average interval between the important crises in England. The connection between sunspots and crises, he thought, was through the effect of rainfall upon the crops (especially in tropical regions) and the influence of the crops upon the demand for British exports and hence upon the prosperity of British industry. In various ways Jevons' thesis has been found wanting. Since 1840,

for example, the average interval between the crises that have occurred in England has been no more than eight or nine years, while before 1840 the interval was exceedingly irregular. And an "average interval" of whatever length, it should be observed, does not necessarily indicate a recurring "period."

But the search for some joint periodic variation of business conditions and the weather continues, different findings have been announced by Professor H. S. Jevons (India), Sir William H. Beveridge (England), and Professor H. L. Moore (United States). There is little agreement among these different investigators with respect to the length of the cycle. Nor do meteorologists agree with respect to weather cycles, and it is by no means definitely established that periodic weather cycles occur. For the present at least, we must regard as not proven the thesis that the business cycle is a reflection of a climatic cycle.

It would be absurd to conclude, however, that the weather and the crops have no effect on the condition of business. Farmers often regard a large (total) crop as a misfortune. The demand for agricultural products is so inelastic that a large crop sometimes sells for less in the aggregate than a small one. From the farmer's point of view a "bumper crop" may mean overproduction. Nevertheless good crops augment and poor crops diminish the prosperity of the general industrial and business activities of a country. When crops are large foods and raw materials cost less. Consumers can spend more money for other things. Poor crops diminish the earnings of the railroads and, in various ways, interfere with the smooth working of the existing mechanism of business and industry. In the United States poor crops diminish the agricultural exports and may thus make it necessary to take gold from bank reserves to ship to other countries in payment for imports. Thus when business conditions are already strained and the available supply of credit is nearly exhausted, a crop failure may help to precipitate a crisis at a time when large crops might have enabled business men to enjoy a further period—another year perhaps—of prosperity. Considerations like these, it is probable, explain the observed fact that many of the more severe crises the United States has experienced have accompanied poor crops. But, on the other hand, not all crop failures have been attended by crises. It may be inferred,

therefore, that if it comes when other conditions are ripe, a crop failure may help to *time* a crisis.

Banking and the Business Cycle. That the way the mechanism of banking operates has much to do with the cyclical oscillations of business is scarcely open to doubt. Banks furnish an elastic supply of purchasing power, swelling in volume as business transactions increase and then—for the supply is elastic only up to a certain point—often enforcing a sudden halt to further expansion.

The period of depression following a crisis is a period of liquidation. Business firms reduce their debts. The loans and the deposits of the bank decrease, and thus their reserve ratios increase. Furthermore, with low prices and a sluggish movement of trade, money that had been in hand-to-hand circulation collects in the banks. Low prices stimulate exports and discourage imports, so that a favorable turn of the balance of trade sometimes brings in gold from other countries. In such ways the reserve ratios of the banks are still further augmented. Low discount rates result, and make business undertakings more attractive. Bonds sell at good prices, so that the time is propitious for building new plants and for other undertakings requiring large permanent investments of capital.

The money borrowed by business men is paid out in the form of the expense of production. It increases the money incomes of consumers, and comes back in the form of a demand for goods. Sales increase, and the low prices, which of themselves had had something to do with the revival of buying, are slowly advanced. The increasing volume of trade and the advancing price level both demand and support further advances by the banks. Consumers' incomes continue to grow, their purchases continue to increase, prices and the volume of trade continue to rise. Thus the loans and discounts of the banks, together with their deposits, tend to increase in a cumulative way.

But the growth of deposits diminishes reserve ratios; money is drawn out of reserves into hand-to-hand circulation; interest and discount rates rise; finally the higher level of prices, by attracting imports and impeding exports, may lead to an unfavorable turn of the balance of trade, so that gold may be exported. The diminishing bank reserves fix limits beyond which the expansion

of credit, and with it the expansion of business, cannot go. Even if no other unfavorable factor—such as a failure of the crops—intervenes, the tide of prosperity encounters an obstacle it cannot surmount. In fact, reserves are likely to continue to decline for a while after the peak of expansion has been reached. This in itself would normally force a *contraction* of bank credit, with results disastrous to business plans and projects.

Important as the cyclical oscillations of bank credit are, however, they do not suffice to explain the business cycle. Cheap supplies of credit help to give the stimulus that turns business upward, enabling it to pass from depression into the period of recovery. Exhausted supplies of credit, moreover, may bring prosperity to the end. But for the most part credit plays a passive role. Its expansion follows rather than precedes the expansion of business. And even if the supply of credit were unlimited, business could not continue to expand indefinitely. The world's recent experience with irredeemable paper money has proved once more that no amount of inflation will carry business and industry up with it beyond a certain point. It operates like a drug, of which increasing doses are required to keep vitality from sagging below its normal level. Inflation may delay but cannot prevent the inevitable collapse.

The Cyclical Movement of Profits, Costs, and Output. The prosperity of business firms is measured by the profits they make. Profits depend upon the margin between the expenses of producing goods and the prices at which they can be sold. The way in which prices and the expenses of production move in the business cycle, with reference to one another, is therefore a matter of prime significance. During the part of the business cycle characterized by rising prices, profits (in general) at first rise and then fall.

Profits for a time increase more rapidly than prices, because the expense of producing goods does not increase so rapidly as prices. Some expenses are, for the time being, fixed—such as rents, interest on outstanding bonds, and various other classes of overhead costs. So long as wage-earners are not fully employed, wages will increase more slowly than prices. The prices of raw materials, if the available supplies are large, may increase less than the prices of finished goods. And so long as the unem-

ployed funds of the banks are large, interest rates will remain relatively low. Just as long as profits continue to rise they will induce a continuing expansion of business undertakings, accompanied by larger borrowings from the banks.

But profits cannot increase indefinitely. With labor fully employed, higher wages have to be paid. And with full employment, there is common testimony, labor loses in energy and efficiency. Moreover, many establishments, as their outputs approach the limits set by the capacities of their plants, find that their increased outputs are produced uneconomically. Congested factories, overtime and night work, crowded railways—these and other factors lead to increased expenses per unit of output, even in industries characterized in the long run by decreasing expenses.¹ Moreover, interest rates increase as bank loans expand—a factor which of itself diminishes the profits that can be made by employing borrowed money in business. In particular, the fall in the prices of bonds, accompanying the rise of interest rates, puts difficulties in the way of undertaking extensive additions to the existing equipment of industry.

Finally, it must be observed, the supply of raw materials is elastic only within limits. In fact, the world supply of some important materials—wool, hides, and rubber are examples—is for the time being fixed and inelastic. The output of many products of the farms and of the mines cannot be increased rapidly enough to keep pace with the expansion of business. The competition of industries for the limited supply of raw materials leads to rapid advances in their prices, and to corresponding increases in the prices of producing goods. The higher prices paid for raw materials, like the higher wages paid to labor and the higher interest rates paid for loans, do not, after a certain point has been reached, elicit a correspondingly larger supply. They come to be merely the means by which a relatively inelastic supply is distributed among competing industrial establishments.

During the period of recovery and the early stages of the period of prosperity, business expansion is accompanied by a rapid increase of the *physical product* of industry (i. e. product measured in tons, yards, and so forth) as well as of prices. But in the later stages of the period of prosperity, for reasons we

¹See *Outlines of Economics*, pp. 167-168, for a discussion of the economic problems of such industries.

have just reviewed, prices are likely to continue to rise, and even more rapidly than before, but the further increase of the physical product is likely to be small. The general condition of business thus becomes unhealthy. Advances in costs follow closely at the heels of advances of prices. Business men can count on further profits only if prices *continue* to advance so as to keep ahead of costs. Their activities tend to take more largely the character of speculative operations in a rising market. Conditions are then ripe for a crisis, for anything that puts a stop to the further advance of prices is sure to precipitate a collapse.

Other Aspects of the Business Cycle. The business cycle is attended with *maladjustments* in industry and in the general economic life of the nation. During its course different sorts of economic phenomena do not move upward and downward together, in even procession. Some things lag behind others. These lags and the maladjustments they bring are among the worst features of the cycle. They show themselves, for example, in changes in the proportions in which incomes are distributed. Wages, salaries, and incomes from fixed investments lose in net purchasing power during the period in which prices are rising. The increase of business profits, on the other hand, is such that they come to constitute a greatly increased proportion of the country's total income.

Such changes in the apportionment of incomes among the different classes in the community are unjust. Moreover, they are accompanied, inevitably, by changes in the demand for goods. The demand for luxuries, for example, is bound to increase faster than the demand for necessities. Such changes in demand exert a cumulative pressure that puts strains upon the existing industrial structure. It is difficult, perhaps impossible, for entrepreneurs to readjust their plans and alter the productive equipment of the country rapidly enough to keep pace with the changes in the demand for goods. Not only in the market for finished goods, but in investments in production goods, as well, does the changing distribution of income have important effects. With rising prices some investors find that they can save less than they did before. But a new source of investment funds is available in the increasing profits of business undertakings. A large part of these surplus profits—over and above the amount paid out, in

dividends or otherwise, to the owners—does not seek the general investment market. More generally such surplus profits are “put back into the business.” The result is a tendency toward overinvestment in prosperous concerns, showing itself in over-expansion and overproduction—overproduction, at any rate, of factories, equipment, and other means of production.

To a very considerable extent the increased earning capacity of business undertakings is “capitalized” in the form of the increased money values imputed to plants, good-will, franchises, and so forth. Established businesses, corporation shares, mines, farms, and so forth, are sold at high prices. Generally the purchase money is, in considerable part, borrowed, and the interest on loans becomes a fixed charge on the income of the newly acquired property. When prices and profits drop, the new holders find these fixed charges a heavy and often an impossible burden. Such, in times past, was often the experience of corporations that had bought or “reorganized” American railways. Such was, in 1921, the experience of farmers who had bought land at the high prices prevailing after the war.

For wage earners business cycles have proved not to be unmixed evils. Though wages fall in a period of depression, the drop is rarely or never as great as the rise during the preceding period of prosperity. Wages, moreover, rarely fall so far as prices, so that the wage earner usually emerges from the business cycle with some net gain in the purchasing power of his money wages. In fact, a very large part of the net advance in the real wages of labor in the United States since the Civil War is accounted for by the gains thus achieved in the Greenback period, in subsequent business cycles, and in the period of inflation during and after the World War. It should not be inferred, however, that without either the business cycle or inflation (which is attended by phenomena very much like those of the business cycle) labor would have failed to make any part of the gains which, in actual fact, it has achieved by their help.

But wage earners have paid a very heavy price for these gains. In the first place, the business cycle intensifies industrial strife and is responsible for no small part of it. When business prosperity has been restored and production is expanding, labor holds the upper hand. It demands and is able to secure some of the income that otherwise would have been added to the profits of

employers. In the period of depression, however, employers recover some of their lost advantage, even though wages do not drop to their old level. This rapid shifting of the strategic positions of employers and the resulting readjustment of wage contracts are attended with strikes (at one time to secure better wages or shorter hours, at another to hold what has been secured) and with other forms of industrial conflict. During the period of prosperity collective bargaining and the closed shop usually gain ground; while the period of depression offers the best opportunity for attempts by employers to weaken the position of labor organizations.

The larger part of the price wage earners pay for whatever net gains they salvage from the business cycle is to be found in *unemployment*. Cyclical unemployment is vastly more significant than the seasonal unemployment to which certain trades are subject. The magnitude of the problem of cyclical unemployment is suggested by the estimates reproduced in the accompanying table, comparing conditions at the peak of prosperity in 1920 and in the midst of depression a year later.

TABLE I.—CYCLICAL DECREASE OF EMPLOYMENT IN THE
UNITED STATES: 1920-1921¹

Industry	THOUSANDS OF EMPLOYEES IN THIRD QUARTER OF THE YEAR		
	1920	1921	Percentage of Decrease
Agriculture	2,300	2,204	4.2
Mining	1,120	944	15.7
Building	1,600	1,415	11.6
Transportation	3,430	2,865	16.2
Manufacturing	11,370	8,400	25.6

Seasonal unemployment does not affect these figures, for in both cases they relate to the same months of the year. Facts like these speak for themselves. They show that the business cycle is an exceedingly serious malady of modern industrial life.

A Summary View. The business cycle is a modern phenomenon. A primitive tribe might pass through periods of famine and plenty, or a somewhat more advanced people experience

¹From estimates by W. I. King, *Employment, Hours, and Earnings in Prosperity and Depression* (Publications of the National Bureau of Economic Research, No. 5), p. 30. And see below, pp. 48-52.

both lean years and good, but these would not be business cycles. Modern business involves an elaborate system of production for a *future market*. The ultimate market—the outlet to consumers—is estimated. On the strength of the estimated size and character of the market, a vast system of production is built up, held together largely by *contracts*—agreements to deliver, to buy or to sell, and to pay. The system of contracts is interdependent. One man's failure to meet his obligations makes it more difficult for others to meet theirs. A crisis comes when the system of contracts breaks down, proving that mistakes have been made in estimating the quantity and character of the goods consumers will purchase at prices profitable to producers and dealers. Dealers find themselves overstocked and manufacturing establishments find themselves overexpanded or overcapitalized.

The theory that the business cycle is a correlate of a weather and crop cycle is not yet substantiated. Most students of the problem, moreover, have come to the conclusion that it is not necessary to seek an external cause. The business cycle, there is good reason to believe, is *self-generating*.¹ Its explanation is not wholly to be found in the way in which the mechanism of credit and banking operates, although elastic supplies of credit are essential to business expansion, and although the sudden exhaustion of such supplies will in itself suffice to bring a period of expansion to an end. The recovery of business from a period of depression comes when there is some slack or surplus, not only in the supply of credit, but in the supplies of labor, of materials, and of the instruments of production as well. Similarly, with the expansion of business, shortages appear in these different fields as well as in the field of credit. Costs advance in such a way that a continually rising price level is necessary if business profits are to be maintained. If the supplies of credit were inexhaustible (as when irredeemable paper money is used) a specious appearance of prosperity might be preserved for some time. But sooner or later maladjustments, born in part of the redistribution of incomes, would bring it to an end. In practice the exhaustion of bank reserves often shortens the period of expansion, while other factors, such as crop failures, or crises in other countries, may exert an important influence.

¹See *Business Cycles* by Wesley C. Mitchell, especially Chapters X-XIV, for a detailed discussion of this subject.

C. DURATION OF THE BUSINESS CYCLE

Various generalizations have been made by students of business conditions concerning the duration of the economic cycle or the length of time which usually intervenes between crises or between industrial depressions. The assumption which has received the widest currency is that depressions occur at 10-year intervals. The proponents of the 10-year theory cite in support of their case the crises of 1837, 1847, 1857, and again after the Civil War in the United States the crises of 1873, 1884, 1893, and 1903. Another generalization is that crises, especially those of the last 15 years, have occurred regularly at 7-year intervals. Thus it is pointed out that commercial crises came in this country in 1907, 1914, and 1920.

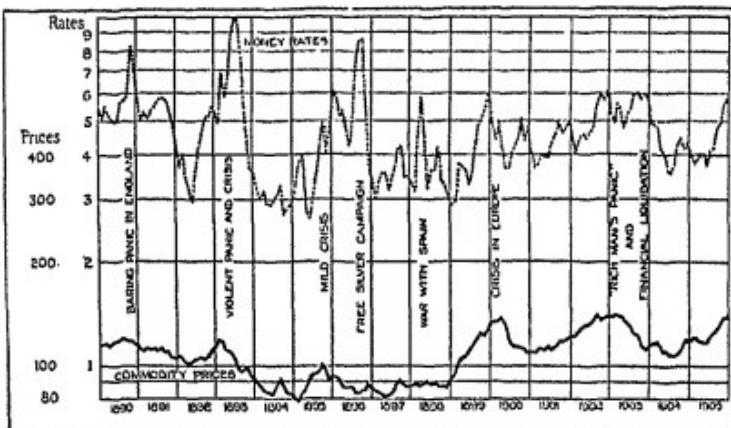


Figure 2a: Money rates and commodity prices, 1890-1905

It has not been proved, however, that the periods between crises have been of uniform duration, and, indeed, one of the most striking and significant things revealed by a careful study of business conditions over the past 50 years is the relatively short interval from depression to depression.

Evidence concerning the frequency of business depressions—in addition to that furnished by the American Telephone and Telegraph Company's Index, 1876-1923, shown in the frontispiece—is offered by the course of commodity prices and money

rates since 1890. The intervals between successive commodity price troughs from 1892 to 1914 are, in months: 34, 26, 44, 44, 43, 43, and 36. The intervals between the low points in money rates are harder to determine because of the pronounced seasonal influence, but a study of the movement of interest rates over the past quarter-century shows that periods of cheap money occurred in 1892, 1894-95, 1898, 1900-01, 1904, 1908-09, 1911, 1914-15. These statistical series are shown in the chart on the opposite page and below (Figures 2a and 2b).¹

The curve representing wholesale prices shows the average wholesale price of 10 commodities selected because, first, they are unusually sensitive to price changes and are not greatly affected by the seasons and, second, they are of a varied nature and are important to the industrial life of the country.² The

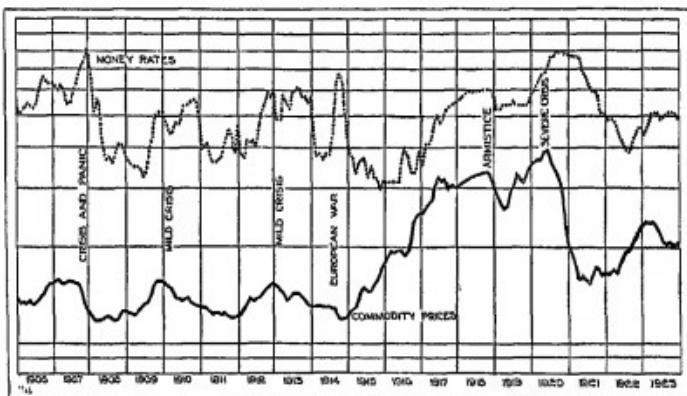


Figure 2b: Money rates and commodity prices, 1906-1923

curve representing rates on commercial paper shows the rate on 60-90 day commercial paper in New York. These series reflect very clearly variations in business prosperity, and the most

¹In this chart the logarithmic or ratio scale is used. Consequently, equal percentage changes in each series are represented by equal vertical distances and the differences in the violence of fluctuations of the two curves correspond exactly to the differences in percentage changes from minima to maxima in the two series.

²The commodities are: cottonseed oil, coke, pig iron, bar iron, pig zinc, mess pork, hides, print cloths, sheetings, and worsted yarns. The prices of these commodities all have similar major fluctuations. See "A Commodity Price Index of Business Cycles," by Warren M. Persons and Eunice S. Coyle, *Review*, prel. vol. 3, pp. 353-369.

noticeable feature of the curves is their cyclical movement. They, therefore, are well adapted for use in an index designed to show fluctuations in general business conditions.

A second noticeable feature of the chart is the correspondence of the major wave movements of the two curves. Comparison of these movements shows, however, that the crests of the waves for interest rates appear to follow, in point of time, the high points for commodity prices. But a decision as to the precise relationship between the wave movements, or cyclical fluctuations, of interest rates and wholesale prices during periods of alternating prosperity and depression is made difficult by three disturbing influences: first, a substantial seasonal movement in interest rates during each year, by which the rates are usually low in the summer and high in the autumn, thus disguising the cyclical movements; second, the effects of such unusual events as the free silver campaign of 1896, the outbreak of war with Spain in the spring of 1898, the declaration of war in Europe in July and August 1914, and the great inflation of prices during the war; and third, the diverse trends of the two series—downward for interest rates and upward for commodity prices—for the whole period covered.¹

The movements of both of these important statistical series—commodity prices and money rates—support the conclusion that for 25 years preceding the war, periods of business depression occurred at intervals of approximately 3 or 4 years with one interval as short as 26 months. Business cycles have been of comparatively short duration. Furthermore, their length has not been sufficiently uniform to warrant the prediction of major or "cyclical" turns in business activity on the basis of a constant time interval between crises. Chapter II therefore considers the construction and interpretation of the Harvard Index Chart and the method of forecasting based upon the use of that chart.

¹Adapted from *Interpretation of the Index of General Business Conditions*, by Warren M. Persons.

II

FORECASTING BUSINESS CONDITIONS

A. THE HARVARD INDEX CHART

THE Harvard Index Chart is derived from the industrial, commercial, and financial statistics which ordinarily serve as a basis for executive judgments concerning the fundamental speculative, business, and banking situations; and each curve of the chart is concerned with one of the important markets which constitute present-day business. These are the speculative or stock market (curve A), the business or commodity market (curve B), and the banking or money market (curve C). Since there is an established time sequence in the movements of the speculative, business, and money markets which can be measured statistically and shown graphically on an index chart, such a chart can be used as a basis of forecasting business conditions. At the major turning points, when business is about to move out of the depression phase of the business cycle and into the phase of recovery, or when crisis is impending and depression is in prospect, curve A (speculation) moves first, curve B (business) moves second, curve C (money) moves third. Thus there is an A-B-C sequence—speculation, business, money.

These relationships appear in the index chart on page 22. Immediately following the armistice, curve B, measuring wholesale prices and business activity, declined sharply while curve A, speculation, moved in a sidewise direction until March, when it turned abruptly upward, clearly signaling the tremendous business boom which began two months later.

The persistent rise of curve C, money rates, and the equally persistent decline in curve A, speculation, both movements beginning in November, 1919, forecast that a decline in commodity prices and business activity would be inaugurated by the summer of 1920.¹ This downward movement of curve A, specu-

¹Such a forecast was published by the Harvard Committee in the *Advance Letter on General Business Conditions*, published February 7, 1920, and subsequently in the *Review*, prel. vol. 2, p. 30. The Committee said: "The continued decline of

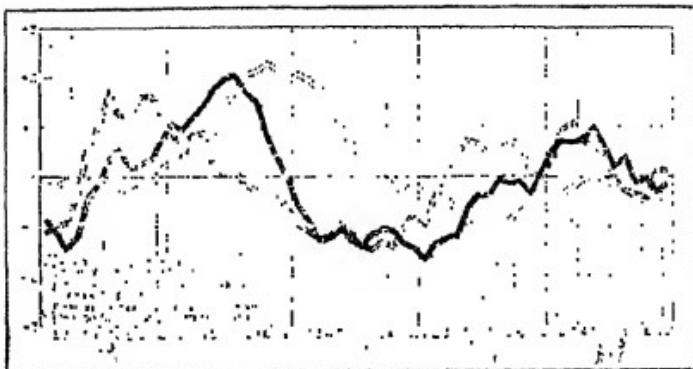


Figure 3: The Index Chart 1910-1923

lation, was particularly significant for three reasons. First, it represented a reversal in the direction of the trend of security prices after one of the most persistent and most spectacular advances in stock prices on record. Second, it was accompanied by a pronounced advance in curve C, representing money rates. Third, curve B, business, showed that commodity prices and business activity were approaching unhealthy levels.

The conclusions to be drawn from this combination of circumstances were: first, that the downward movement of speculation, accompanied by advancing money rates, was the beginning of a major downward swing in security prices; and second, that the decline in speculation would be followed, after an interval, by a marked recession in commodity prices and industrial activity. Liquidation began in the spring in certain industries that were in the weakest position and by summer the unsettled had become general.¹

Early in 1921 the reversal of trend in money rates was followed first by increasing bond prices and in August, 1921, by curve A indicates a recession in commodity prices and business activity beginning between April and December. The probability is that the recession will take place early rather than late in the period named, because the intervals between the fluctuations appear to have become shorter since the war." The Committee had previously indicated that a check to the upward movement of commodity prices and business activity might be expected, and possibly a recession of prices. *Ibid.*, prel. vol. 1, *Monthly Supplement*, December, 1919, p. 2.

¹See *Report of the Joint Commission of Agricultural Inquiry*, House Report 408, 67th Congress, 1st Session.

advancing stock prices, these movements indicating that business in general was soon to enter the recovery phase of a new cycle.¹ The pronounced advance in speculation, both movements beginning in the middle of 1921, clearly forecast that a period of substantial business recovery and advancing prices would be inaugurated within a period of from six to ten months from the beginning of the upturn in curve A, speculation.² This forecast, like the previous ones, was confirmed by actual market conditions as reflected by the upward movement of curve B, business, of the Index Chart early in 1922.

Thus in interpreting the Index of General Business Conditions on which the Harvard University Committee on Economic Research bases its forecasts, there are three factors to consider:

1. The direction of the movement of each curve in relation to the movements of other curves;
2. The direction of the immediately preceding movements;
3. The magnitude of such movements.

These points are of basic significance in forecasting because they indicate the precise phase of the business cycle and the phase which is in prospect.

B. CORRECTION FOR SECULAR AND SEASONAL INFLUENCES

The data used in the construction of the Index Chart are series of monthly items covering an extended period—that is, since 1903. Items pertaining to widely separated months or years cannot, however, be used in their crude form.

Each monthly item of bank clearings, pig-iron production, interest rates, and the like, is a composite, the make-up of which depends on the year and season. That is, various elements contribute to make bank debits—for January, 1924, for instance—the precise total reported and account for the differences between that total and the total in January, 1919, or in other intervening months. In general the actual items result from the combination of four elements—secular, or long-time trend; seasonal variation; cyclical fluctuation; and a residual factor, which arises from unpredictable causes, such as war or strikes. Before

¹See chapter VI, below, p. 73.

²See *Letters*, vol. 1, p. 17, for the statement of this forecast.

the statistical series could be sorted into groups according to the times at which maximum or minimum points of the *cyclical* fluctuations were reached, it was necessary to devise methods for eliminating the seasonal influences and long-time movements, or "secular trend." Such methods were first developed by Professor Warren M. Persons, and his methods have been generally followed by the other students of business cycles.¹

CORRECTION OF DATA FOR SEASONAL INFLUENCES AND SECULAR TREND²

The object of correcting the actual data is to secure comparable items that reveal the fluctuations of the business cycle. The need of eliminating secular trend and seasonal variation from statistical series before attempting to employ them as indexes of business conditions, as well as the method used in such elimination, may be made clear by a simple illustration.

The purpose is to judge the significance of items for different dates. Take the production of pig iron in the United States at any three dates some distance apart. The tonnage of pig-iron production in the United States in March, 1904, was 1,447,000; the tonnage in February, 1908, was 1,077,000; while the tonnage in December, 1918, was 3,434,000. Which one of these figures indicates the greatest relative activity in the iron industry? To answer this question one must take account of the fact that the country and the iron industry have grown in the interval from March, 1904, to December, 1918. It is obvious that if the growth were by equal monthly increments, a "normal" of 1,528,000 tons in March, 1904, for instance, would not be normal in 1908 or 1918. On the assumption of uniform growth the normal of February, 1908, would be 1,901,000 tons, and that of December, 1918, would be 2,932,000 tons. The actual production figures for the three months are 1,447,000 tons, 1,077,000 tons, and 3,434,000 tons, respectively. The ratios of the actual figures to

¹The detailed analysis by Professor Persons appears in his volume *Indices of General Business Conditions*, published by the Harvard University Committee on Economic Research. Professor Persons also contributed the chapter "Correlation of the Time Series," in the *Handbook of Mathematical Statistics*, (Houghton-Mifflin Co.). A less technical explanation of his methods of correcting for trend and of calculating seasonal indexes appears in this volume, Chapter XI, p. 569.

²Adapted from "The Index of General Business Conditions: A Non-Technical Explanation," by Professor Persons, *Review*, prel. vol. 2, p. 39.

the corresponding "normal" figures are 95%, 57%, and 117%, respectively. Omitting the percentage signs, the figures just given are relatives of pig-iron production, so constructed, by the use of bases increasing with time, that the normal growth, or "secular trend," is eliminated. This point is illustrated by Chart I of Figure 7, page 30, showing the monthly production of pig iron in the United States. The rise of the curve stands out clearly in spite of the irregularities of the actual figures. The secular trend is indicated by the straight line fitted to the curve.

But there is another type of fluctuation which must be removed before the figures may be used as indexes of business conditions: those variations which are purely seasonal in character, which recur year after year as a consequence of the round of the seasons. If one assumes that the conditions of all the months of the year are alike, that there is no characteristic and recurrent variation which regularly differentiates the item for March from that for February or December, then he can legitimately compare the above-mentioned relatives—95, 57, and 117. But the iron industry is seasonal in character. Just as a normal production for 1904 is not normal for 1918, so, within any year, a "normal" production for March is not normal for February or December. In fact, analysis of the figures for the period 1903-14 shows that if the average monthly production for any year be represented by 100, the production for March, February, and December would be represented by 106, 94, and 100, respectively. Consequently, the seasonal relatives 106, 94, and 100 should be subtracted from the relatives of 95, 57, and 117, found above, in order to get significant figures for comparison. The differences are —11, —37, and +17. These differences are "percentage deviations of original items from secular trend corrected for seasonal variation."¹ They are comparable with each

¹The Index of General Business Activity of the American Telephone and Telegraph Company (frontispiece) is expressed in terms of "percentage deviations from secular trend corrected for seasonal variation." So, also, is the Index of Trade for the United States, as developed by Professor Persons (Table C-I, p. 611). The Index of Trade is designed to give a view of the combined fluctuations of trade, transportation, manufacturing activity, and industrial employment, month by month, since January, 1903. This index is based upon representative statistics, but certain data are not available throughout the entire period and others, being expressed in terms of dollars, do not accurately reflect fluctuations in the physical volume of trade since the war. Consequently, it has been necessary to use somewhat different selections of statistics for the intervals 1903-15, 1915-23, and all statistics expressed in terms of dollars have been excluded since 1915. Overlapping indexes have been

other, and they measure the relative activity (with respect to existing equipment) of the iron industry in March, 1904, February, 1908, and December, 1918. The deviations reveal the depression in March, 1904, the deep depression of February, 1908, and the great activity of December, 1918.

The influence of seasonal fluctuations is illustrated by Charts II and III of Figure 7, page 30. In Chart II the heavy line shows the production of pig iron corrected for the long-time movement, as just explained, while the dotted line shows the seasonal variation in this industry. By subtracting the items of the seasonal curve from the corresponding items of the other curve, a curve is obtained which is corrected for seasonal variation as well as for long-time movement, or secular trend. (Chart III of Figure 7.) It will be noticed that the resulting curve is smoother than the uncorrected curve.

Some statistical series were much more variable than others; that is, their upward and downward fluctuations were more frequent and more extensive. Railroad gross earnings fluctuated between 10% below and 10% above normal; while the number of shares traded on the New York Stock Exchange fluctuated between 50% below and 60% above. Evidently a common measure of variability was needed, in terms of which each of the series might be expressed in such a manner as to make their fluctuations on the chart strictly comparable. The measure adopted was the "standard deviation"—the most widely used index of variability.¹ This is an average depending upon all of the items and varying directly with the "dispersion" or distribution of the items above and below their arithmetic average; the wider the dispersion of the items the greater is the standard deviation. By using the standard deviation a legitimate comparison can be made between such widely different series as pig-iron production and the interest rates (Figure 6); its use obviates the arbitrary selec-

computed for 1915 and 1919, and the index based upon the revised selection of statistics in each case is shown as a dotted line on the chart. All statistics utilized have been adjusted for long-time trend and seasonal influence. The resulting index, therefore, shows cyclical fluctuations in the physical volume of trade, transportation, manufacturing activity, and industrial employment combined. See Chapter XII, below, p. 610, and "Index of Trade for the United States," by Professor Persons, *Review*, prel. vol. 4, p. 70.

¹See Chapter XI, pp. 599-600, for a brief explanation of the method of calculating the standard deviation.

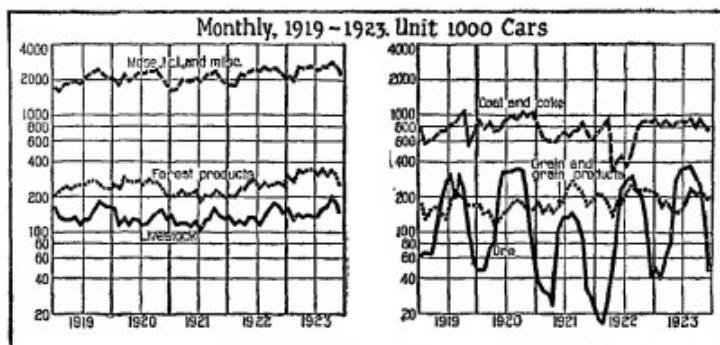


Figure 4: Revenue freight-car loadings

tion of units—always a questionable procedure—for making graphic comparisons of series.¹

The various series, expressed in terms of their standard deviations, were plotted on translucent paper so that they could be compared by placing one above the other. This comparison revealed the fact that the upward and downward movements of some series regularly lagged behind those of other series. The

¹ See Chapter XI, pp. 569-601, and especially pages 584-585; if it is desired simply to correct original figures for seasonal movements, simple division of the actual monthly data by the seasonal index for that month—serves the purpose admirably.

The original data shown in Figure 4, above, reflect the seasonal influences clearly; they are the monthly totals of car loadings for the principal descriptions of traffic. In the case of coal and coke, the normal seasonal movement is obscured by the strike in 1922 and by the necessity of making up the shortage of fuel reserves in the early months of 1923. In 1919, 1920, and even in the depression year of 1922, the seasonal advance to a peak in October is plainly evident. In that month occur also the peaks in live-stock traffic and "merchandise, l.c.l., and miscellaneous" car loadings; the last-named class includes the products of manufacturing industry, and regularly makes up about 60% of the total for each month. In addition, while the peak of car loadings of grain and grain products comes in August, the October figures are normally above the monthly average for the year. So, also, are October loadings of forest products, the month-to-month variations of which are, however, very irregular. In the case of iron ore, where the volume of traffic is affected by the conditions of navigation on the Great Lakes, the peak normally comes in August, although the drop toward the low levels of the winter does not become precipitate until after October.

In order to bring into clearer focus the relationship of the business cycle to the volume of railroad traffic, the original figures for car loadings have been adjusted (Figure 5) to allow for seasonal influences, which obscure, though they do not hide, the cyclical movements. Even in Figure 4 the depressed condition of business in 1921, the recovery in 1922, and the prosperity in 1923 are apparent from an examination of each of the curves, except in the case of grain and grain products, which showed a decrease rather than an increase in 1923. The cyclical course of business becomes more evident, however, after corrections for seasonal influence

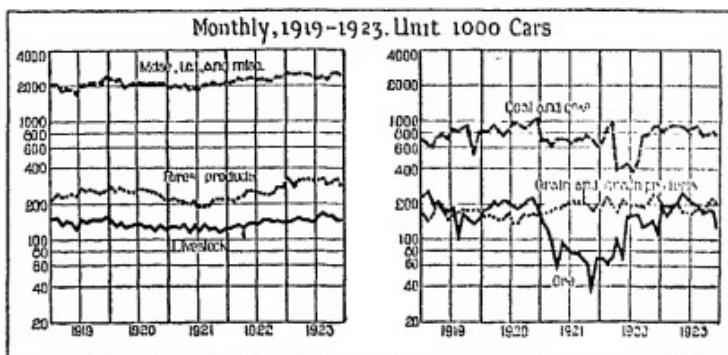


Figure 5: Revenue freight-car loadings (seasonal fluctuation eliminated)

"lags" thus disclosed are illustrated by Figure 6. It is evident that the upward and downward movements of the solid curve (interest rates) come regularly later than the corresponding movements in the other curve (pig-iron production).

C. CONSTRUCTION OF THE HARVARD INDEX CHART¹

The precise method of constructing the Index Chart will be understood by referring to the charts on pages 30 to 32 (Figures 7 to 9).

Charts I and IV present the actual figures for two series chosen for illustration—pig-iron production and interest rates. On the same charts appear two straight lines which represent the long-time movements of those series.

have been made. In Figure 5, on which the adjusted curves appear, the failure of loadings of grain and grain products to respond to the business advance in 1923 is again apparent; the corrected grain loadings, like the uncorrected figures, have been below those of a year previous. The general level of loadings of coal and coke in 1923, when corrected, although below that for 1920, is considerably above that for 1921. But the coal industry was still suffering from the readjustment following the high prices incident upon the strike of 1922, and normal relationships did not yet prevail. The curves for "merchandise, l.c.l., and miscellaneous" freight, forest products, and live stock, on the other hand, had risen to levels well above even those of the prosperous 12 months which came between the middle of 1919 and the middle of 1920, during the upswing of the last business cycle. The corrected curve for ore traffic—which had been at higher levels in 1923 than in any of the preceding years except 1920—did not rise steeply until it felt the stimulus of the confident upward movement of business early in 1922. See "Railroad Traffic and the Business Cycle," by the present writer, *Railway Age*, vol. 76, pp. 783, 885, and 987.

¹Adapted from *Interpretation of the Index of General Business Conditions* by Professor Persons.

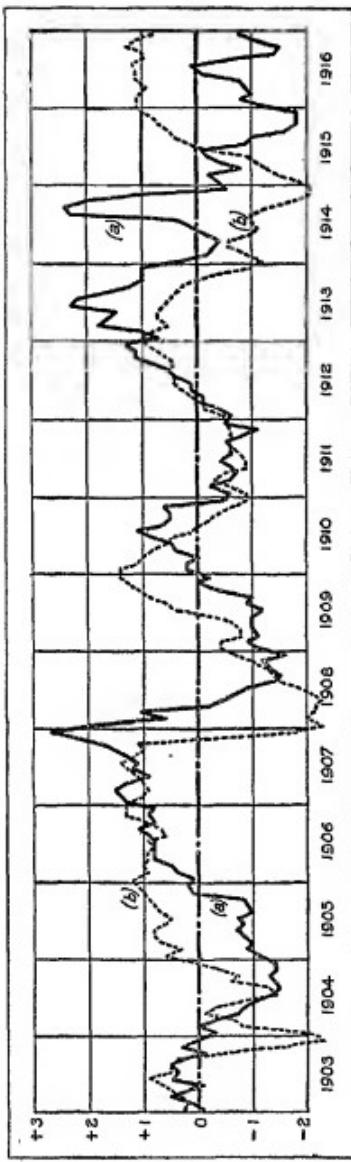
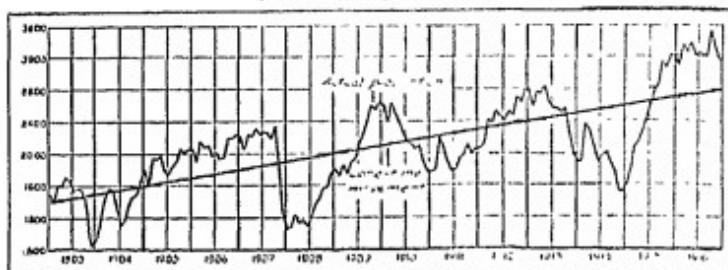


Figure 6: Comparison of the corrected figures for (a) the rate of interest on 60- to 90-day commercial paper and (b) pig-iron production (each expressed in terms of its standard deviation)

Explanation: This chart shows the relationship revealed by superposing the curve showing pig-iron production (plotted on translucent paper) on the curve showing the rate of interest. It will be noticed that the upward and downward turns of the solid line (interest rates) regularly come several months later than the corresponding turns of the dotted line (pig-iron production). The sharp advance of interest rates in the summer of

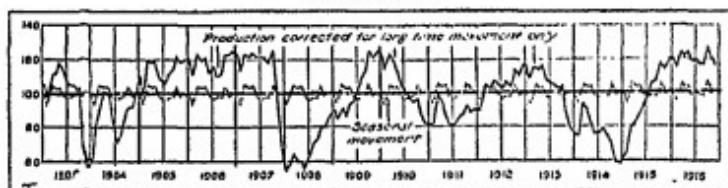
1914 reflects the uncertainty created by the outbreak of the war. Although pig iron continued to fall off until late in the year, war orders caused a marked expansion in the output during 1915; pig-iron production continued on a high level throughout the war. The degree of correspondence between these curves was further tested by the coefficient of correlation. Similar comparisons were made between the other series.

CHART I. PIG-IRON PRODUCTION: ACTUAL FIGURES
(Unit: 1,000 gross tons)



EXPLANATION: The above chart shows the monthly production of pig-iron for the years 1903-14. As the United States, throughout this period, grew in population and in the extent of its commercial activities, new manufacturing units were set in operation and there was a gradual expansion in the total output of the nation. Correction for this influence was accomplished by expressing the actual tonnage manufactured in each month as a percentage of the corresponding "normal" production indicated by the straight line. The resulting figures appear in Chart II below.

CHART II. PIG-IRON PRODUCTION: FIGURES CORRECTED
FOR LONG-TIME MOVEMENT
(Percentages)



EXPLANATION: The solid line on the above chart represents pig-iron production corrected for the long-time movement, but not for the seasonal movement; the dotted line indicates the usual seasonal variation in the output during the year. Correction for the seasonal influence was made by taking the differences between the corresponding items of these two lines. These differences (presented in Chart III below) are called "the corrected figures" since corrections for both the long-time and seasonal movements have been made.

CHART III. PIG-IRON PRODUCTION: CORRECTED FIGURES
(Percentages)

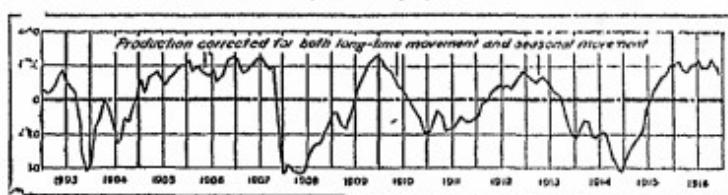
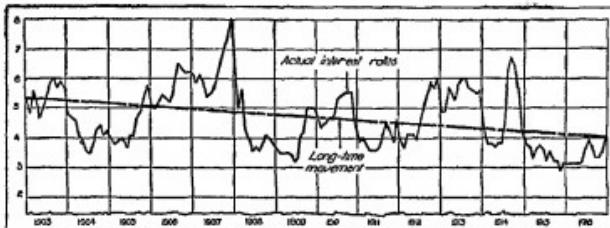


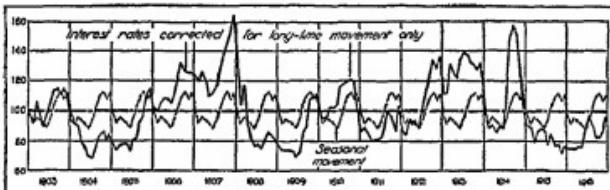
Figure 7: Correction of statistics of pig-iron production

CHART IV. INTEREST RATES: ACTUAL FIGURES
(Unit: one per cent per annum)



EXPLANATION: The above chart shows the actual rates on choice double-name 60-90 day commercial paper by months for the years 1903-16. During this period there was a gradual downward trend of discount rates. Correction for this influence was accomplished by expressing the actual rate for any month as a percentage for the corresponding "normal" rate. The resulting figures appear in Chart V below.

CHART V. INTEREST RATES: FIGURES CORRECTED FOR
LONG-TIME MOVEMENT
(Percentages)



EXPLANATION: The solid line on the above chart represents the rates on 60-90 day commercial paper corrected for the long-time movement, but not for the seasonal movement, the dotted line indicates the seasonal variation in rates through the year. This variation, it is clear, is relatively greater than that of pig-iron production (Chart II). Correction for the seasonal influence was made by taking the difference between the corresponding items of these two lines. The differences (presented in Chart VI below) are called "the corrected figures" since both the long-time and seasonal movements have been removed from them.

CHART VI. INTEREST RATES: CORRECTED FIGURES
(Percentages)

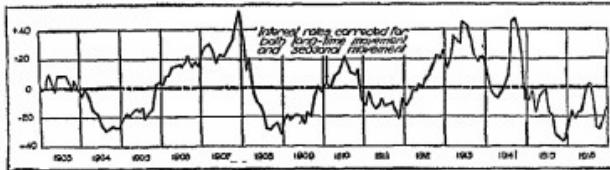
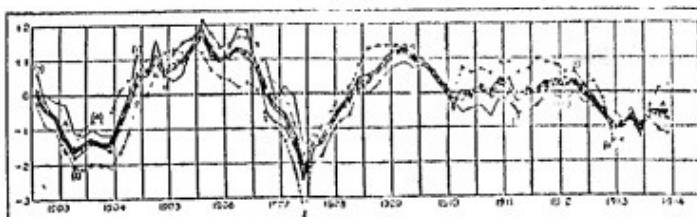


Figure 8: Correction of interest rates

CHART VII. CORRECTED FIGURES FOR THE SERIES OF THE SPECULATIVE GROUP (A), 1903-14



(A) Group average

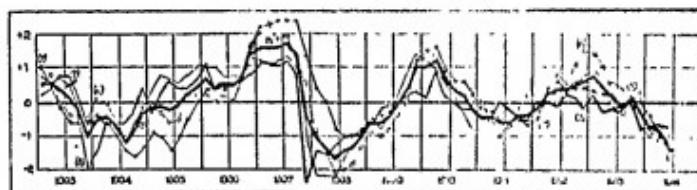
(1) Bank clearings of New York City

(2) Average price of industrial stocks

(3) Average price of railroad stocks

(4) Average price of railroad bonds

CHART VIII. CORRECTED FIGURES FOR THE SERIES OF THE BUSINESS GROUP (B), 1903-14



(B) Group average

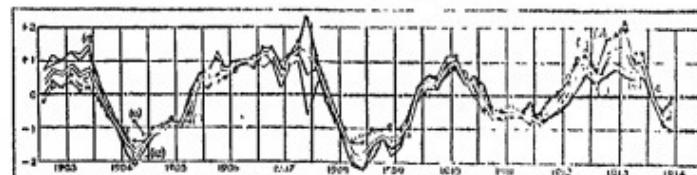
(5) Bank clearings of the United States outside New York City

(6) Bradstreet's index of wholesale commodity prices

(7) United States Bureau of Labor Statistics' index of wholesale commodity prices

(8) Pig-iron production

CHART IX. CORRECTED FIGURES OF THE SERIES OF THE BANKING GROUP (C), 1903-14



(C) Group average

(9) Interest rate on 60-90 day commercial paper in New York City

(10) Interest rate on 4-6 months commercial paper in New York City

(11) Loans of New York City Clearing House banks (reversed)

(12) Deposits of New York City Clearing House banks (reversed)

Figure 9: Construction of the pre-war Index Chart

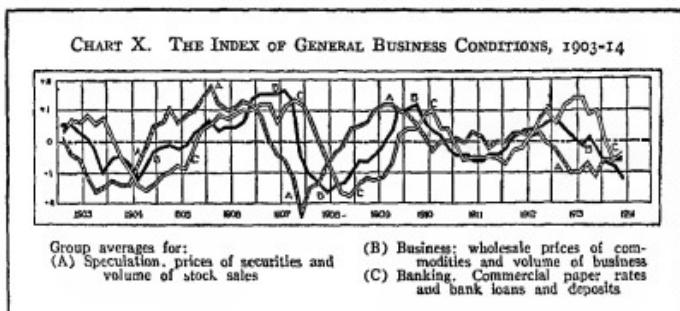


Figure 10: The Index of General Business Conditions, 1903-1914

Charts II and V present the figures of the two series corrected for the long-time movements only. The usual seasonal movement of each series is shown by the broken line.

Charts III and VI present the figures corrected for both long-time movements and seasonal influences. It is evident that the figures, thus corrected, reveal the cyclical fluctuations more clearly than do the crude data.

Charts VII to IX present the corrected figures for the two series chosen for illustration, and ten others. It will be seen that the twelve series are sorted into three groups—group A, being given in Chart VII, group B in Chart VIII, and group C in Chart IX—according to the times at which maximum and minimum points of the series occur. Group A, consisting of series which fluctuate first, either upward or downward, are all series depending upon speculation; group B, consisting of series in which the fluctuations follow or lag behind, in point of time, the fluctuations of the speculative group, all have to do with business and industrial activity; group C, consisting of series whose fluctuations lag behind those of the business group, all have to do with banking conditions and the money market. The average of each group of series was then found, with the result of obtaining an average representing speculation, an average representing business, and an average representing banking, during the period covered by the charts. In Chart X curves are shown representing these three averages, and in this manner an Index of General Business Conditions was obtained for the

period of 1903-14. The relationships which obtained between the three curves representing speculation, business, and banking, during the pre-war period, are evident from the chart, the most significant for the purpose of forecasting being the order in time of the major movements.

D. INTERPRETATION OF THE HARVARD INDEX CHART¹

The logical and important relationships which exist in the movements of the three curves recorded on the pre-war Index Chart were indicated when the performance of the current Index Chart was examined earlier in this chapter. First of all it is clear that there is an interval of several months between the movements of each of the three curves at the critical or "cyclical" turning points. It is further evident that these major or "cyclical" turning points, whether upward or downward, always come in the same order. The turning points in curve A, speculation, precede, either up or down, the turning points in curve B, business, by from six to ten months throughout the entire eleven years. Similarly the turning points in curve B, business, precede the turning points in curve C, money, from two to eight months. It is this regularity in the sequence of the movements of the three curves which affords a logical and practical basis for scientific business forecasting. At major turning points in the business cycle, therefore, curve A moves first, B second, C third—speculation, business, money.

The recession in commodity prices and business activity, curve B, which began in March, 1903, had been forecast in the fall of 1902 by the inauguration of a major downward movement in security prices accompanied by advancing money rates. The recovery of business which began in the late summer of 1904 was anticipated by a reversal in the movements of the money and speculative curves of this chart. That is, the upward movement of speculation, curve A, and the downward movement of money rates, curve C, in the fall of 1903 were the signal that business would begin to revive within a period of from six to ten months.

The sharp decline of curve A, speculation, which began in

¹Adapted from *The Harvard Index of General Business Conditions: Its Interpretation*.

November, 1906, accompanied by high money rates, clearly anticipated by ten months the sharp break in commodity prices and business activity which was inaugurated in the fall of 1907. Again, the recovery of business, which began in the early summer of 1908 was preceded by a reversal in the trends of curves A and C, the upward movement of speculation and the downward movement of money rates which began at the very end of 1907 providing a substantial basis for the forecast that within a period of from six to ten months business would begin to recover from the depression. Throughout the remainder of the period the same general relations continued to be maintained.

It will be observed, also, that throughout the entire period of eleven years a progressive advance in business and commodity prices over a period of months, followed by a persistent rise in interest rates, was the forerunner of a decline in security prices; and that, after such a decline in security prices, a decline in business of several months' duration (when followed by a decline in money rates) was the signal for a revival in speculative activity and advance in security prices. Thus it is clear from an examination of the 1903-14 Index Chart that, if this index had been available at the time, the important changes of the eleven years which it covers could have been forecast with very great certainty.¹

The post-war Index Chart (Figure 3) is based upon the same fundamental principles as underlie the construction of the pre-

¹See *Letters*, vol. 1, pp. 276-8 and especially the *Letter* of March 31, 1923, for brief discussion of the relationships between the money, commodity, and stock markets. By the end of March adjusted money rates had advanced the 1½% which had preceded every major downward movement of industrial stocks since 1897. The rise of 1½% is measured from the latest recorded low point of rates, and this rise, to be significant, should occur during the revival and prosperity phases of the business cycle.

The essential relationships are indicated in the table on page 36. This shows (a) the dates of the low points of adjusted commercial paper rates during business cycles of the last 25 years, and the subsequent dates (b) when a rise of at least 1½% was registered, and (c) when a major decline in industrial stock prices began.

It is evident from the table that, during the past 25 years, an increase of 1½% occurring during periods of rising industrial stock prices has forecast periods of decline in these prices; but it is also evident that such a rise does not indicate an immediate downward turn of the stock market. Since intervals varying from 2 months to more than a year have intervened between such a rise of interest rates and the beginning of a major downward movement, the present increase of somewhat more than 1½% indicates that the upward movement of the general average of stock prices has about culminated, but does not enable one to forecast the date of the beginning of a major downward movement. *Letters*, vol. 2, p. 86.

(Footnote continued on page 36)

war chart explained in the preceding pages.¹ The principles of interpretation are therefore the same.²

E. THE HARVARD INDEX AND THE INDIVIDUAL BUSINESS

Commodity prices never move with even front.³ Neither do all industries or individual business enterprises respond at the same identical time to changes in fundamental economic condition. It is, therefore, obviously desirable to make due allowance for important deviations in the operations of an individual business from the movements of general business as shown by the Harvard curve B.

(Footnote continued from page 35)

RATES ON 60-DAY PAPER CORRECTED FOR SEASONAL INFLUENCE ¹					Stock Prices	
(a) Low Point		(b) Rise of at Least 1 1/4% from Preceding Low Point			(c) Beginning of Major Decline of Industrial Stocks	
Date	Rate	Date	Rate	Rate	Beginning of Major Decline of Industrial Stocks	Interval of (c) from (b)
Dec., 1898	2.53	Mar., 1899	4.11	1.58	Dec., 1899	9 months later
Sept., 1900	3.82	Sept., 1902	5.13	1.31	Mar., 1903	6 months later
Nov., 1904	3.69	Nov., 1905	5.23	1.54	Jan., 1907	14 months later
Dec., 1908	3.35	Nov., 1909	4.05	1.30	Jan., 1910	2 months later
Nov., 1911	3.48	July, 1912	4.76	1.28	Nov., 1912	4 months later
Nov., 1915	2.98†	April, 1917	4.28†	1.30	July, 1917	3 months later
Feb., 1919	5.19†	Mar., 1920	6.68†	1.49	Nov., 1919	4 months earlier‡
Aug., 1922	3.80§	Mar., 1923	5.16	1.36§	...	...

*There was a rise from 4.02 in April, 1914, to 6.18 in August, 1914; but this does not constitute a "signal" since it occurred when business was declining, not during revival or prosperity. Seasonal movements in rates were not registered during these years of establishment of the Federal Reserve System and consequently no seasonal correction was made.

†In 1919 money rates were kept at an artificial level, in order to facilitate Government financing, and therefore did not reflect actual credit conditions.

‡To obtain corrected interest rates for the two months, we apply the seasonal adjustment to a base of 5%, and add or subtract the result from the actual rate. The seasonal correction for August is .015 of the base (to be subtracted) and for March is .02 of the base (to be added). For August, then, the correction is $5 \times 0.015 = 0.075$, and for March, $5 \times 0.02 = 0.1$. Subtracting the first from the August figure, we obtain a corrected rate of 3.80% for that month ($3.875 - 0.075$). Adding the second to the March figure, we obtain 5.16% for that month ($5.08 + 0.1$). The difference ($5.16 - 3.80$) is 1.36%. One-half the pre-war correction is used.

¹In the cases of commodity prices and money rates, new data were available and a novel and effective device for eliminating secular trend (and yet preserving the cyclical fluctuations) was developed. The statistical series utilized in the construction of the post-war Index Chart—bank debits, stock prices, commodity prices, money rates—are all expressed in terms of dollars. Curve A, speculation, is based upon New York bank debits and industrial stock prices; curve B, business, upon outside bank debits and commodity prices; and curve C, upon commercial paper rates. "Other loans" (chiefly commercial) of reporting member banks of the Federal Reserve System have become available only since 1921, and there is not, as yet, sufficient evidence of the persistent similarity of their fluctuations with those of

²See page 37 for Footnotes 2 and 3.

The difference between the timing of the cyclical changes of prices is well illustrated by the price movements of three important commodities, which the Harvard Committee has studied: cotton, hides and paper. While the prices of both raw cotton and cotton goods move with the business curve (B), paper prices lag, whereas hide prices anticipate the cyclical movements of general business.

The commodity price chart shown in Figure 2 (pages 18 and 19) traces the movements of an index constructed from the prices of commodities which move in sympathy with general business. The major swings of this price index are also of relatively large amplitude; cyclical declines in the index are precipitate and the

money rates to warrant inclusion in curve C. Sales on the New York Stock Exchange have been excluded from the speculative group for two reasons: first, the series is not in price terms and, second, its movements are much more irregular than those of the other series utilized. See *Letters*, vol. 2, pages 137-140, and "The Revised Index of General Business Conditions," by Professor Persons; *Review*, prel. vol. 5, p. 187.

²See reference on page 36.

"The Pre-War Indexes of General Business Conditions," by W. L. Crum, *Review*, vol. 6, p. 16.

Thus, in 1920, when it was necessary to determine the interval which was likely to intervene between the upward movement of money rates and the downward movement of security prices on the one hand and a major decline in commodity prices and business activity on the other, similar business situations during the period 1903-14 were examined. For example, a close correspondence between the relationships of the curves of the Index Chart in late 1919, and early 1920, and similar situations during the 11 years preceding the war is revealed on the test-period Index Chart in the fall of 1902, the fall of 1906, the late summer of 1909, and in the early winter of 1912. See *Review*, prel. vol. 2, p. 30.

³See reference on page 36.

See *Report of the Joint Commission of Agricultural Inquiry*, Part I, Chapter V, "The Break in Prices in Different Countries and Industries," and especially the folded table (E-2) of prices at p. 60. This table shows that the liquidation of 1919-20 was inaugurated by declines in the prices of hogs and live stock in the middle of 1919, and extended to the metals in the early spring of 1920. The price of refined petroleum did not break until February, 1921, and of anthracite coal, the last important commodity to decline, until April, 1922.

¹See *Letters*, vol. 1, p. 5 and vol. 2, p. 72 (hides and leather); vol. 1, pp. 113 and 210 (cotton); vol. 1, p. 210 and vol. 2, p. 44 (paper); also vol. 1, p. 175 (wool), and vol. 3, p. 15 (iron and steel), and "The Iron and Steel Industry during Business Cycles," by Professor Persons, *Review*, prel. vol. 3, p. 378; "Pig Iron and Scrap Prices during Business Cycles," by O. W. Blackett, *Ibid.*, prel. vol. 5, p. 272; "Raw-Silk Prices and the Business Cycle," by Eunice S. Coyle; *Ibid.*, vol. 6, p. 22.

In *The Problem of Business Forecasting* (vol. 6 of the Pollak Foundation Publications), which is made up of papers presented at the 85th Annual Meeting of the American Statistical Association (1923), are important chapters on business forecasting in particular industries: "Forecasting Automobile Production," by Ray B. Prescott; "Forecasting Building Construction," by W. C. Clark; "Forecasting Petroleum Production," by Joseph E. Pogue; and "Forecasting Railway Traffic," by David Friday and I. E. Peabody. There is also a chapter "Relating Manufacturing Policy to the Business Cycle," by L. D. H. Weld.

recoveries sharp.¹ Other commodities respond sluggishly to the influence of the business cycle and their price swings show a relatively narrow amplitude. Obviously the business man who operates in a market where the price movements are both rapid and of large amplitude, as are those of the commodities used in the construction of the ten-commodity index of the Harvard Committee, is especially concerned with the probable course of the business cycle.

Most of the cases presented in this book are concerned with the problems arising out of the relationships of an individual business to the business cycle. In not a few instances they illustrate the difficulties (and temptations) which business men face in a period of active business. Failure to consider adequately the cyclical nature of prices and business activity in 1919-20 accounted for the difficulties of most concerns which encountered serious trouble during the subsequent deflation and depression.² Typical business problems are presented in Part II of this book.³

The economic principles drawn from the study of business cycles have also been used in the development of budgets and other systems of financial and operating control. In Chapter VII is presented a discussion by a business man who has applied the methods of statistical analysis explained in this chapter to the problem of forecasting the sales of his own enterprise.⁴ A large number of business men undoubtedly would discover, through investigation, that the activity of their business corresponds approximately with the movements of the Harvard "B" line, although some would find that their business precedes curve B or lags behind it by varying intervals. The method of making such a comparison is explained in Part III.

¹See Table B-I, p. 606.

²See also *Business Cycles and Unemployment*, Report and Recommendations of a Committee of the President's Conference on Employment, (March 1, 1923), pp. 1-7.

³On the general subject matter of this chapter see especially Balboa Fisheries (overexpansion at peak) p. 109; Ormiston Motor Car Company (promotion at peak) p. 130; Allagash Shoe Company (conservative purchasing at peak) p. 287; Thompson Refineries (enforcement of customers' contracts) p. 465; Waite Advertising Agency (credit risk) p. 491.

⁴"The Control of an Industry in the Business Cycle," by Howard Coonley, reprinted from the *Harvard Business Review*, vol. 1, p. 385. An earlier discussion of the same general problem is "Management and the Business Cycle," by Henry S. Dennison, *Journal of the American Statistical Association*, vol. 18, p. 20. See also "The Organization of a Statistical Department," by Marion B. Folsom, *Harvard Business Review*, vol. 2, p. 178.

III

CYCLICAL VARIATIONS IN THE VOLUME OF MANUFACTURING AND MINING; EMPLOYMENT AND UNEMPLOYMENT

A. MANUFACTURE¹

THE monthly records of manufacturing output show better than any other data the real nature of cyclical changes in the volume of production. In the first place, agricultural data are inadequate because agricultural production assumes a yearly form, and records available only at yearly intervals do not give a clear picture of the character of the business cycle. During a single year business may pass through at least two distinct phases of the cycle. The opening of the year may find industry proceeding at top speed, and the close of the same year find it staggering into depression. A total or average for the year will disclose neither of these conditions. True, a general notion of ups and downs in the physical volume of production may be gathered from annual data, but the details of the picture are lost. Returns for shorter periods are necessary. Quarterly data hardly go far enough in this direction; weekly data go farther than is necessary. Monthly data effect a satisfactory compromise and serve to throw all features of the business cycle into bold relief. From the nature of the case, then, data on agricultural production will not suffice. To secure monthly data, resort must be had to the records of manufacture and mining.

Records of manufacturing output have the further advantage—an advantage which they hold over the data of mining as well as agriculture—of affording a recapitulation of the results of production in modern economic life. Practically all consumption goods, with the obvious exception of such things as whole milk and fresh vegetables, pass at one stage or another through the factory. Furthermore, the manifold items of industrial plant and equipment are all fabricated. In fact, in manufacture a cross-

¹Adapted from an article by Professor Edmund E. Day, *Review*, prel. vol. 5, p. 30.

section is had of practically all important lines of production. Agriculture, mining, forestry may be said to provide the raw materials which in manufacture are brought together and either directly or indirectly adapted for human consumption. Manufacturing records thus provide an almost complete picture of changes in the volume of production.

Some of the most significant aspects of fluctuations in the volume of manufacture are revealed by comparisons of these fluctuations with the movements of other elements of the cycle. For example, the volume of trading and the volume of consumption both appear to fluctuate within narrower limits than the volume of manufacture. If a relationship of this sort is definitely established in the course of further investigation, fundamental elements in the physical character of the cycle will appear. It will then be evident that in the course of the cycle there are periods in which manufacture proceeds more rapidly than consumption—periods in which, in other words, supply is bound ultimately to outrun demand at current prices, with the inevitable consequence of price readjustment. Conversely, there are other phases of the cycle in which production falls short of current consumption, with the result that stocks are depleted, demand exceeds supply at current prices and an upward tendency of prices in time develops. Influences of this sort, at work in the business cycle, should be carefully diagnosed. It is not the purpose of this study to undertake a comparison of fluctuations of the volume of manufacture with all the other important elements of the business cycle, not even with those which, like the volume of trade, are of a physical character. It is hoped, however, to effect an accurate measurement of the cyclical fluctuations of the volume of manufacture as a first step in the subsequent comparison of such fluctuations with other related factors.

Further significant features of changes in the volume of manufacture are to be found in the differences of these changes from one industry to another. Fluctuations in the production of pig iron are quite different from those in the manufacture of newsprint. Goods which relate to industrial apparatus show a variation quite unlike that displayed by goods turned out for immediate consumption. Differences appear both in the amplitude and in the timing of the fluctuations.¹

¹For the charts illustrating this condition see *Letters*, vol. 1, p. 303.

Since the purpose of the investigation is a better understanding of the *cyclical* fluctuations of the volume of manufacture, the analysis has to separate these fluctuations from the other type of variation ordinarily embodied in time series. Three varieties of movement appear in practically all the data with which the analysis has to deal: long-time movements, or trends, reflecting the persistent growth or decadence—the rise or fall—of the factors in question; seasonal variation corresponding to the favorable and unfavorable influences of the succeeding periods of the year and the variable lengths of the several calendar months; and cyclical fluctuations manifesting the successive phases of the general business cycle. The first two of these have to be measured and eliminated. In general, this object is accomplished by the means developed by Professor Persons and explained in full in the January and April, 1919, numbers of the *Review*.¹ Once the trends and seasonal movements have been eliminated, "adjusted relatives" are obtained which register the cyclical fluctuations of the series in percentages of "normal." Subsequently, these adjusted relatives are combined in significant groups in constructing the indexes of the physical volume of production explained in the September, 1920, January, 1921, issues of the *Review*. The final result of the analysis is a monthly adjusted index of the volume of manufacture for all lines combined.²

¹Reprinted as *Indices of General Business Conditions*; see also, Chapter XI, p. 569.

²This has been appearing once a month since March, 1922, in the weekly *Letters* of the Harvard Economic Service. In preparing the index for Professor Day's paper, however, numerous slight revisions have been made. Though these affect appreciably some of the series of adjusted relatives, they result in no material change in the adjusted index.

In the *Special Letter* published under date of September 23, 1921, an "unadjusted" monthly index of the volume of manufacture was presented. In the construction of this index no attempt was made to eliminate the effects of trends and seasonal movements; the volume of manufacture each month was expressed simply as a percentage of the 1919 monthly average. The methods followed were in general identical with those employed in developing the annual unadjusted index of the physical volume of production. (See *Review*, prel. vol. 2, p. 309.)

The unadjusted index has not been regularly published by the Harvard Committee since the adjusted index became available for the reason that an unadjusted index is less serviceable than an adjusted in the study of the business cycle. Nevertheless, an unadjusted index has its uses. It affords a picture of relative changes from whatever source derived and has the further advantage of being more nearly comparable with certain other data commonly used in business analysis.

Regular publication of the unadjusted index has not seemed necessary for another reason: the index has been widely copied and, with unimportant modification, is now currently available in a number of other publications. Perhaps the most accessible of these is the *Federal Reserve Bulletin*. The bulletin first presented

Since the adjusted relatives and indexes all state production as percentages of "normal," a clear idea of the meaning of "normal" is a prerequisite to thorough understanding of the analysis. In general, "normal" conditions are those which would prevail if the business cycle were eliminated and all sporadic and irregular factors—such as strikes—entirely avoided. Even under these conditions, there would be room for substantial changes in the volume of manufacture over the years, for long-time tendencies of growth or decadence, and short-time influences of a seasonal character would still be operative. "Normal" is a composite of trend and seasonal variation. The net effect of the business cycle is to carry conditions in any line of industry now above, now below, normal. In brief, "normal" is neither the animation of high prosperity and the subsequent boom, nor the lethargy of deep depression and the first stages of recovery. Rather it is a middle condition above and below which the fluctuations of the business cycle take place.¹

Cyclical fluctuations of the volume of manufacture vary widely, not only among the different industries, but among different groups of industries. Thus, industries producing basic materials for further fabrication exhibit fluctuations differing distinctly,

an unadjusted index of the volume of manufacture in its issue of March, 1922. Except for the inclusion of a few additional series, the index is practically identical with that published in the Committee's *Letters* of September 23, 1921, October 22, 1921, and so forth.

More recently, in the issue of January, 1923, the *Federal Reserve Bulletin* has published an "index of the volume of production in basic industries." The index is uncorrected for trend, the relatives being referred to the base of the monthly average of 1910. It is adjusted, however, for seasonal variation, by a method which differs from that employed by the Committee. Furthermore, it is unlike the indexes of the volume of manufacture in that a number of mining series are included. Despite these differences, the index observes closely the precedents set in the earlier publications of the Harvard Committee, both in the materials utilized and the methods followed.

¹The Committee has defined "normal" as a condition which is neither a boom nor a depression, but a period of active business. Manufacturing activity is considered normal when it strikes an average between good and bad years over a long period, after allowance has been made for both seasonal and growth factors. Thus, manufacture is normal when the index stands at 100 or very near it. In the post-war period the index has risen as high as 117 and has fallen as low as 72. The latter figure indicates a depression; the former figure, if sustained for some time, a boom. Extreme fluctuations below the normal line have been greater than those above it. The normal level of the volume of manufacture represents something like 75% to 80% of capacity; but capacity production is seldom, if ever, attained. Even in March and May of 1923, when manufacturing output was 17% above normal, a further expansion might have taken place if demand had been sufficiently intense. *Letters*, vol. 3, p. 39.

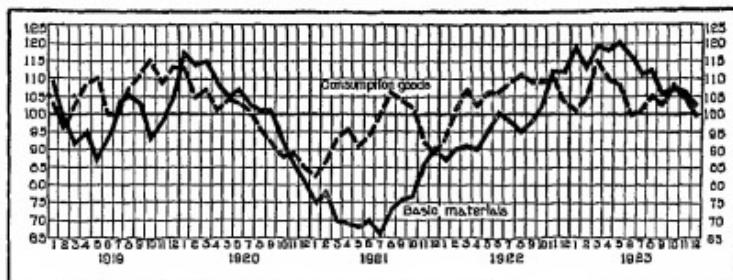


Figure 11: Adjusted Index of the Volume of Manufacture: Basic materials and consumption goods (Normal = 100)

both in amplitude and in timing, from industries producing goods for immediate consumption. Still other differences are shown by industries producing apparatus and equipment for manufacturing enterprise, industries producing materials for buildings and plant, and industries producing materials for the packing and conveying of goods—that is, industries having to do with transportation and trade. It is to be hoped that in time the characteristics of each of these important groups of industries may be subjected to careful analysis. For the present, however, it is impossible to construct indexes for all of the groups. Nevertheless, it is entirely feasible to set up indexes registering fluctuations in the volume of manufacture of (1) basic materials; (2) consumption goods.

These indexes for larger groups of manufacturing industries are obtained by combining (in the form of a weighted arithmetic mean) the appropriate series of adjusted relatives. The weighting of the several different series is on the basis of "values added" as reported in the 1919 Census of Manufactures.

The indexes for basic materials and consumption goods are given graphically in Figure 11 on this page.¹ The two adjusted indexes show interesting differences. The index for consumption goods is more uneven in its course, but seems to fluctuate within narrower limits. Furthermore in 1921 it registered an upward movement earlier than did the index for basic materials. These contrasts cannot be viewed as definitive until the indexes have been broadened somewhat and observed for a longer period of time, but they suggest differences in the fluctuations of manufacture which would seem to possess unusual significance.

¹See Table D-I, Chapter XII, pp. 617-618 for tables of indexes.

The general index for all lines of manufacture is obtained by combining the adjusted indexes for basic materials and consumption goods with the adjusted relatives for pig-iron production, each of the adjusted indexes being given a weight of two, and pig-iron production a weight of one, in the combined index. Pig-iron production is included partly because numerous studies have shown the series to be a remarkably dependable index of industrial activity, partly because there are reasons for believing that pig-iron production registers with considerable accuracy fluctuations in the volume of production of industrial apparatus and equipment. The adjusted index set up in this fashion is shown in Figure 12.

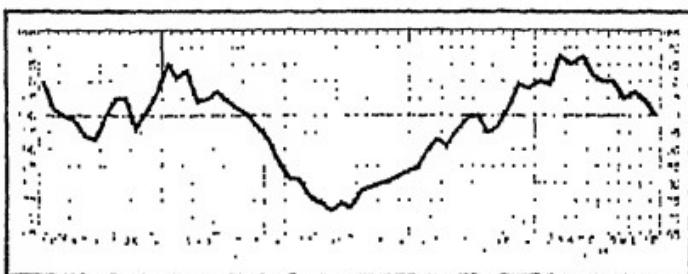


Figure 12: Adjusted Index of Volume of Manufacture (Normal = 100)

The index shows clearly the cycle through which manufacture has passed in the United States since January, 1919. The slight reaction following the signing of the armistice gave way by the middle of 1919 to an upward movement which, despite the coal and steel strikes of the fall of 1919, rose rapidly to a peak in the spring of 1920. Thereafter, notwithstanding substantial differences in the situation from industry to industry, there was a general retreat which by the fall of 1920 had developed into a rout. Industrial output, considering all lines together, reached its minimum in May-July, 1921.¹ Since that date there has been a strong upward movement. Despite the retarding effects of the coal and railroad strikes of 1922, this upward movement had carried the

¹It is to be noted that the rise of the index above normal in 1920 was not as great as its fall below normal in 1921. Clearly, the possibility of expanding production quickly is not as great as the possibility of contracting. Expansion encounters physical limits of a definite sort. Limits upon contraction, upon the other hand, are not so much physical as economic in character.

volume of production back to normal by the fall of 1922, and gave promise of carrying it still further in the course of the next few months.

It should not be assumed that the volume of manufacture bears any simple and direct relationship to the extent of prosperity. True, it is safer to infer that when business is prosperous the volume of manufacture will be above normal, and when industry is depressed the volume of manufacture below normal. But it cannot be assumed that a substantial and increasing volume of manufacture invariably means a betterment of business conditions. Producers have sometimes to choose between closing down and accepting the consequent disruption of their working organizations, or of continuing operations at a temporary loss in order to keep skeleton organizations intact. The latter course may appear to be the lesser of two evils; and, as a result, a substantial volume of manufacture may emerge even when margins of profit are still so slight as to be intolerable over any extended period of time.

Similarly, costs may rise so high during a boom period as to take most of the profit out of a large volume of business. At both extremes of the business cycle there should be caution against reasoning hastily from the volume of manufacture to the degree of prosperity in manufacturing. There is much significance in the fluctuations of the volume of manufacture, but the significance is by no means simple and self-evident.

Analysis of changes in the volume of manufacture really is but one part of a more general study of the stresses and strains which occur in the industrial mechanism, as one phase of the business cycle gives way to another. Some of these stresses are of a financial character, others of a purely physical sort. The problem is to analyze them in all their interrelations.

In this analysis the monthly adjusted index of the volume of manufacture may be made to render valuable aid. Doubtless the index should be extended to include lines of manufacture not yet adequately represented; doubtless, too, constant effort should be made to increase the accuracy of the trends and seasonal factors upon which the index is based. But the index in its present form is a valuable instrument of cycle analysis. It is a dependable barometer of cyclical fluctuations in the volume of manufacture.

B. MINING¹

The Harvard Index of the Volume of Mining is based on the same conception of "normal" as is the adjusted Index of the Volume of Manufacture. The two main groups which make up the index are fuels and metals. Adjustment for seasonal movement has been made for the fuel group and for iron ore and copper, but not for the remaining metals.² The fuels include anthracite coal, bituminous coal, and petroleum. The metals include copper, iron ore, zinc, and silver. The group indexes beginning with January, 1919, are given in Chapter XII.

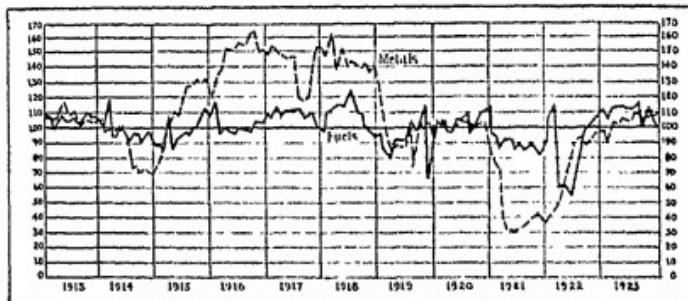


Figure 13: Adjusted Index for the Output of Metals and Fuels, monthly, 1910-1923 (Normal = 100)

During the first eight months of 1922, the mining index was much influenced by developments in the coal industry. The rapid rise during February and March, 1922, resulted from a great increase in coal production preceding the strike on April 1. Then for the next five months, when no anthracite coal was being produced and only one-half the normal volume of bituminous, the index was much depressed. After September, however, the Index of the Volume of Mining moved very closely with the Index of the Volume of Manufacture.

The metals, more seriously affected by the depression than were the fuels, did not get back to normal until January, 1923. The slowness of the recovery was due in no small part to unsettled

¹The methods used and the data employed in the construction of this index are explained by Miss Elizabeth Boody, in the *Review*, vol. 6, p. 77.

²Seasonal variation in the production of zinc and silver is slight and data are not adequate to make adjustment for it possible.

conditions in Europe, since in normal times a large proportion of the metal products of the United States is exported.

C. CYCLICAL VARIATION IN EMPLOYMENT

During the depression of 1921 the problem of unemployment attracted an unusual amount of attention. The President, Mr. Harding, called a conference on unemployment in September, 1921, and a distinguished committee of that conference (of which Mr. Owen D. Young was chairman) subsequently published (March 1, 1923) a report, with recommendations, on *Business Cycles and Unemployment*.¹ Previously, Professor William A.

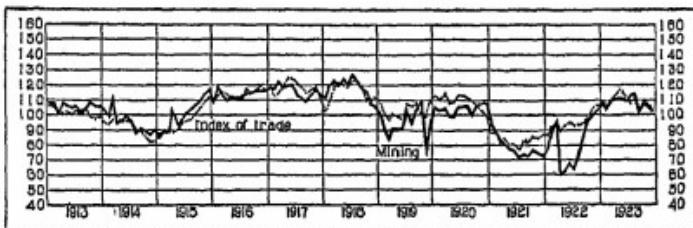


Figure 24: Adjusted Indexes of the Volume of Mining and the Volume of Trade, monthly, 1919-1923 (Normal = 100)

Berridge had developed an index of employment for the Harvard Committee; this has since been revised by him for the post-war period.² More recently the Federal Reserve Board has published an Index of Employment in Manufacturing Industries and an Index of the Labor Market which were prepared under his direction. The latter index makes use of the statistics published by the states of Massachusetts, Illinois, New York, Ohio, Pennsylvania, and Wisconsin which show the number of jobs offered, and the number of applicants for these jobs. The index as published is based on the ratio of these two series for each state, month-by-

¹This is the title also of the more elaborate report prepared for the use of the Committee by the National Bureau of Economic Research, Inc., under the direction of Professor Wesley C. Mitchell, and published by McGraw-Hill. An outline of that volume appears at p. 24 of the Committee Report. It contains a chapter by Professor Berridge, which draws upon his article "Employment and the Business Cycle," published in the *Review*, prel. vol. 4, p. 12, and upon his Pollak Foundation Prize Essay, *Cycles of Unemployment*, Houghton-Mifflin Co.

²"Industrial Employment in the Present Business Cycle," *Review*, prel. vol. 5, p. 292.

month.¹ It is corrected for seasonal variation. In presenting the Index of Employment the *Federal Reserve Bulletin* said:

Changes in employment are an important factor in indicating and measuring trends in the business situation, and accurate information as to the extent of employment or unemployment throws much light upon current economic conditions that cannot be readily obtained from other facts. Monthly fluctuations of employment indicate indirectly changes in the physical volume of goods being produced and also, because of the relation between employment and pay-rolls, show the changes in the income and buying power of wage earners. An index of employment, therefore, measures in some degree both current productive activity and the purchasing power of a large body of consumers. In analyzing and interpreting banking developments such an index is useful because it has a bearing upon the character and sources of the demand for credit and upon the demand for currency to meet pay-roll.²

D. EMPLOYMENT, PRICES, AND PRODUCTION³

Some interesting economic relationships are disclosed in Figure 15 where the Harvard Index of the Volume of Manufacture and the Wholesale Price Index of the United States Bureau of Labor Statistics are compared with the employment index. As one would naturally expect, the fluctuations of employment show great similarity to those of production and prices at many points; but at others there are marked discrepancies. Similarities and discrepancies are both significant.

¹"In periods of increasing industrial activity, employers seek to expand their operations and offer jobs in greater numbers, and hence the numerator of this ratio rises. At such times the denominator falls, because workers either are mostly employed or are able to find positions with ease without need of applying to the employment offices. Conversely, in a time of business depression the scarcity of jobs brings about a decline in the numerator and the plethora of applicants causes a rise in the denominator, with a resulting rapid diminution of the ratio between the two. Thus the value of the ratio tends to vary in either direction through a wider range than either of its terms and is therefore a more sensitive barometer of cyclical changes than either variable taken separately. On the other hand, the ratio is less susceptible to insignificant fluctuations than either of its terms, which fluctuate violently from month-to-month because of inconsistencies in the original date, such as the varying use of four- and five-week periods as representing the month. Where these inconsistencies are found alike in numerator and denominator they are eliminated. Finally it tends to lessen the influence of long-time growth, which is likely to affect the numerator and denominator in nearly equal degree." *Federal Reserve Bulletin*, vol. 10, p. 84.

²*Federal Reserve Bulletin*, vol. 9, p. 1272.

³"Industrial Employment in the Present Business Cycle," by William A. Berridge, *Review*, prel. vol. 5, p. 297. See also *Employment, Hours and Earnings in Prosperity and Depression*, by W. L. King, published by the National Bureau of Economic Research, Inc.

Until March, 1920, the movements of employment, production, and wholesale prices followed much the same course. Then, for two to four months, employment behaved like prices, which still remained strong and encouraged manufacturers to hold and even to try to increase their labor force; though prices rose $2\frac{1}{2}$ times as far above the 1919 level as did employment. Production began to diminish in April, 1920, partly because of labor and transport difficulties, and partly because of steadily diminishing efficiency of labor in the latter part of the boom period. From July, 1920, to July, 1921, when the bottom had dropped out of the market, all three curves were alike once more, except in level; prices again were extreme, falling to a point more than 30% below 1919; production dropped to more than 25%, and employment more than 20%, below their respective 1919 averages.

After the middle of 1921 the similarity was less close. Prices advanced only about 10 points, or about 16% of the low level, employment barely 25, but production almost 50%. In other words, the three indexes at the middle of 1923 stood approximately as follows, compared with the respective 1919 averages: prices,

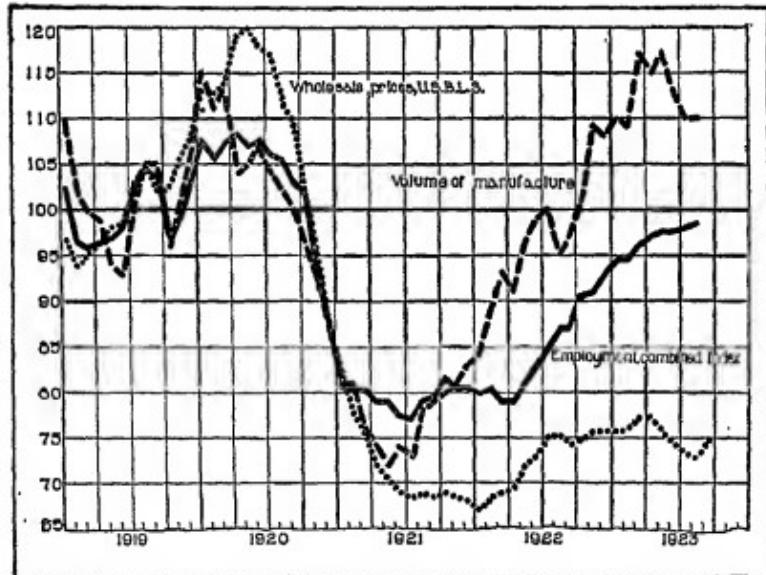


Figure 15: Indexes of Industrial Employment, Production, and Prices (Employment and prices: 1919 average = 100; Production: Normal = 100)

20% below; employment, 2 or 3% below; production, 10% above.

Production and employment have both advanced, in general, for the past two years, but the latter at a much slower rate.¹ Undoubtedly, there would now be a greater volume of employment in manufacturing industries if prices had advanced more decisively; they have barely regained one-fifth of the vertical distance back toward their 1920 peak. Sluggish prices naturally lessen the ardor of the employer for hiring more workers. On the other hand, no employer can afford to hold out forever for decisive price improvements, but will employ more help to produce for even low prices if he considers the prospect of much higher prices remote and uncertain. Moreover, many employers found during the depression of 1921 that a reduction of force brought increase rather than decrease of product, because the greatly increased fear of unemployment on the part of those remaining on pay-roll led them to devote themselves much more assiduously to their work. Undoubtedly the efficiency of labor during 1919 and 1920 had been at a low ebb, largely because of the carry-over of the war-time attitude that "anybody can hold the job." We know from direct reports that the attitude of labor has, in many cases, continued to improve since 1921 even after reaching the stage of the cycle where a slowing-down in the improvement of labor efficiency might have been expected.

Yet it must not be supposed that labor efficiency in this sense—the will to work—is the only aspect of general industrial efficiency affecting the present employment cycle.² Other phases, conditioned like that above partly by the state of the cycle itself, and partly by more deeply rooted forces, are also important. We must not forget that capitalistic or "round-about" methods of production, aided by machinery, and so forth, have for many years been increasing the production of manufactures more rapidly than the numbers employed in manufacturing. Thus in the

¹Many persons, including at least two reputable reviewers of business conditions, forgot that this slower rate of rise on the part of the employment index is not peculiar to the present cycle, but is fairly characteristic, as the writer has repeatedly pointed out. Even in the boom of 1919-20, production rose much more than employment. This apparently characteristic tendency should be allowed for in a critique of the relations between employment and production.

²In this connection, compare the views held by other writers on "the efficiency of labor," such as John W. Riegel in *Harvard Business Review* for April, 1922, pp. 342-354; Paul H. Douglas in *Administration* for July, 1922, pp. 15-17; and W. Randolph Burgess in *Management and Administration* for July, 1923, pp. 25-28.

15 years 1899-1914, the volume of production was rising about 4% per annum, according to the best production indexes. The aggregate number employed in manufacturing was increasing at a regular rate of about 150,000 per year, or roughly 3% in early years but less than 2% in later years. The contrast of these lower rates with that for production becomes still more striking when we recall that the average length of the working-day very materially declined during the period 1899-1914, also that the growing influx of immigrant and woman labor into industry was "diluting" the volume of employment. Clearly enough, we were learning better how to combine economic resources in more productive combinations, aided by invention and improved business organization. New methods were enabling the country to increase the total production of manufactures at a markedly higher rate than that of the numbers directly engaged in such production.

Recently, the war has taught us even more about the possible value of technological research, labor-saving machinery and arrangements for reducing lost motion of many kinds, plans for scientifically selecting, training, and remunerating employees, and so forth. These and many similar forces are strongly at work now, tending to render the output per employed worker greater and greater, perhaps at an accelerated rate. The fact that in many lines prices have been sluggish and margins narrow has required the manufacturer to eliminate all unnecessary cost elements. The check on immigration, coupled with the heavy drain of labor into construction, and the bitter and largely successful resistance of organized labor to wage reductions commensurate with what the price situation might normally have called for, renders the supply and price of labor key elements in the present industrial situation.

While wholesale prices and cost of living have advanced at only a snail's pace since the bottom of the slump, money wage rates have now apparently recovered fully one-half and perhaps two-thirds of the vertical distance from 1922 slump toward 1920 peak, despite the fact that wages have in the past lagged considerably (roughly, six to ten months)¹ in their response to up- and down-swings of employment. This pronounced recovery in money wage rates has powerful effects on not only the indus-

¹See, e. g., *Cycles of Unemployment, 1903-22*, chap. vi, "Employment Cycles and Buying Power."

trial but the commercial situation. With living costs still practically at rock bottom, the aggregate equivalent of present money incomes among the industrial classes is probably as high in "real" purchasing power over consumable goods as in 1920, and perhaps actually higher, though this is not equally true of incomes per capita.

As yet it is too early to judge how this complex set of relationships will affect the usefulness of employment as an index of either production or purchasing power during the future. The fluctuations in both still seem to be fairly well shown by the employment index; the difficulty lies chiefly in interpreting the vertical relation of the curves to each other, especially their difference in slopes. We have no independent evidence of a statistical nature, on the actual efficiency of either labor as such or industrial organization as a whole. Indeed the relation of the two indexes to each other is taken by some as a statistical index of efficiency. This may or may not be legitimate. In any case, we believe that the element of true secular trend, so far as it can now be determined, is not serious in the index of either employment or production during the post-war period. Yet we may eventually discover that secular increase in the general efficiency of industry is greater since the war than before, and that a break in the slope of one or both indexes is therefore necessary. On the other hand, the whole phenomenon of the discrepancy may prove to be less a characteristic of the post-war trend than of the present business cycle.¹

¹For cases on labor relations and the business cycle see Belmor Steel Company (difference of labor policy) p. 356; Ranley Lathe Works, (reduction of labor force in 1921) p. 360; Parr and Sons Company (refusal to accede to demands during period of inactivity) p. 362; Thrasher Cotton Mills Company (sale of common stock to employees) p. 382; Pennell Hosiery Mills (profit sharing) p. 378; Kimbrough Machine Company (employee participation in management) p. 369.

IV

ADVERTISING AND THE BUSINESS CYCLE¹

MAJOR fluctuations in the volume of advertising carried by newspapers and magazines since the war have taken place slightly in advance of similar movements in general business conditions. A relatively small amount of advertising is, of course, carried when business is depressed, and a large amount when business is active; but the beginning of major increases or decreases in the volume of advertising during the five years following the close of the war generally preceded the corresponding upward or downward movement of business. This tendency to precede general business appears at the turning-points of the index of advertising in magazines, and for nearly all phases of the cycle of newspaper advertising. In Figure 16, on the following page, the indexes of total advertising for newspapers and for magazines are compared with curve B of general business conditions.

Examination of the curve of newspaper advertising reveals the lead of this curve relative to the curve of general business. The advance of the index of newspaper advertising was in progress at the very beginning of 1919, at least two months before general business turned upward; and the peak occurred in February, 1920, six months before the downturn in general business. There was a precipitate drop in newspaper advertising in March and April; then the curve moved sidewise until the late autumn, when it resumed the decline and sagged concurrently with the business curve. The index reached bottom in April, 1921, remained fairly stationary until October, and then advanced three months earlier than the business curve. The strong upswing, thus initiated, persisted throughout 1922 and the first quarter of 1923. Newspaper advertising entered upon the recession of the summer of 1923 one month before general business; and its upturn in September, and subsequent strong advance, forecast the improve-

¹*Letters*, vol. 3, p. 47; this study was made by Professor W. L. Crum, statistician of the Harvard Committee. The *Letter* contains a memorandum on the sources of data and methods of analysis which is here omitted.

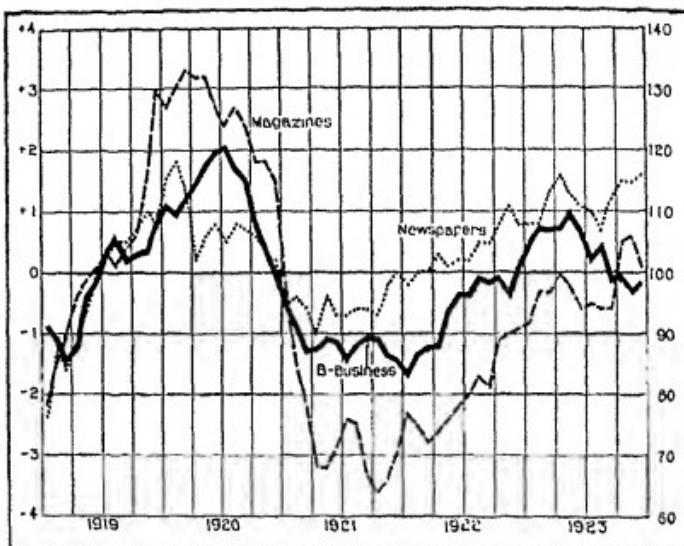


Figure 16: Indexes of Advertising in Newspapers and Magazines (scale at right) compared with the business curve (B) (scale at left). (Business curve corrected for trend and seasonal variation; advertising curves corrected for seasonal variation only)

ment in general business which was described in the *Letter of February 16, 1924.*

The movement of advertising in magazines did not differ greatly in 1919 from that in newspapers. The peak of the curve came one month later in 1920 than was the case for newspapers, but it was four months earlier than the high of general business. The decline was gradual until the end of the year, but then became very sharp and carried the index to an extremely low level early in 1921. Although the recovery after October, 1921, was less complete than that in newspaper advertising, the forms of the movements of the two curves, even in respect of the more important details, were substantially similar.¹

¹All of the advertising indexes for the post-war interval are series of relatives on the 1919-21 average as base, with correction for seasonal variation in all cases except financial advertising in magazines. The newspaper index prior to 1919 consists of relatives on the 1913 average as base, with correction for seasonal variation. The adjusted indexes of seasonal variation were found in each case by the methods described in the *Review of Economic Statistics* for January, 1919. There were,

Comparison between the curves for newspapers and for magazines shows that the latter curve has a much greater range of fluctuation than the former. This condition is due partly to the abnormally high level of magazine advertising in the years 1919 and 1920, but this fact is insufficient to account for all of the dissimilarity. An additional reason is found in the tendency for magazine advertising to be used chiefly by producers and distributors on a national scale, whereas the retail distributor dominates in newspaper advertising. Consequently, magazine advertising may be expected to fluctuate more widely than newspaper advertising, just as wholesale prices fluctuate more widely than retail prices.

A second notable difference between the two curves is the greater elevation maintained by the newspaper curve since February, 1921. This can be explained largely by noting that the indexes are based upon the average for 1919-21. Hence, the unusually large volume of magazine advertising in 1919 and 1920 would tend to lower the index for magazines for the later years. It is doubtful if this is the complete explanation, and it may be that there is an actual drift of advertising from magazines to newspapers. Such a drift would be described statistically as a difference in trends: the trend of magazine advertising would be taken as less sharply upward than that of newspaper advertising, or perhaps even downward. It is not practicable to obtain an answer to this question by the usual calculations. Although it is possible to get data for several years prior to 1919 and thus secure series sufficiently long to analyze for trend, the figures for 1919 and 1920 are affected so sharply by the heavy advertising

however, certain important difficulties in the way of a direct analysis of the figures by these methods. In the case of weekly magazines a correction was necessary for the months in which there were five issues, and a somewhat more complicated correction for months with five Sundays was necessary in the case of many newspapers having Sunday editions. Moreover, in the case of newspapers, the regional differences in seasonal movement were so considerable that it was necessary to construct individual indexes for each regional group, and correct each group index by the appropriate seasonal adjustment. Hence, for the newspaper curves for the United States as a whole (total advertising and advertising by classes), each regional index was obtained by computing weighted aggregates of the lineage figures of the individual papers within that group, converting these aggregates to relatives on their average for 1919-21 as base, and adjusting these relatives for seasonal variation; and the general index was derived by taking a weighted average of the regional indexes. The regional groupings conform closely to the jobbing districts of the *Standard Rate and Data Service*, and the weights used in calculating the regional aggregates were estimated from circulation figures by that Service.



Figure 17: Indexes of Advertising in the Chicago region and the New York region
(Corrected for sea level variation)

expenditures encouraged by excessive federal taxation, that such analysis would not be conclusive. In view of the exceptional condition existing immediately after the war, no satisfactory determination of the trends of these two curves is yet possible.

Figure 17 assists in explaining certain peculiarities in the movement of the index of newspaper advertising, and in particular the temporary stabilization during the summer of 1920. The newspaper curve of Figure 16 represents conditions in the United States as a whole, and is therefore an average of the experience in several geographical regions. Although there are many minor differences in the newspaper curve for the several great regions, the chief difference of significance is set forth by the comparison, in Figure 17, of the curves for the Chicago region and the New York region. The Chicago curve suffered a severe decline early in 1920, but immediately recovered to levels almost as high as before the break, and did not resume the decline until the downward movement of business was well under way. In the New York curve there was almost no trace of this secondary recovery: the index for this region declined almost continuously from the first of 1920 until late in 1921, and this decline preceded, in most of its course, the similar decline of the business curve. The events

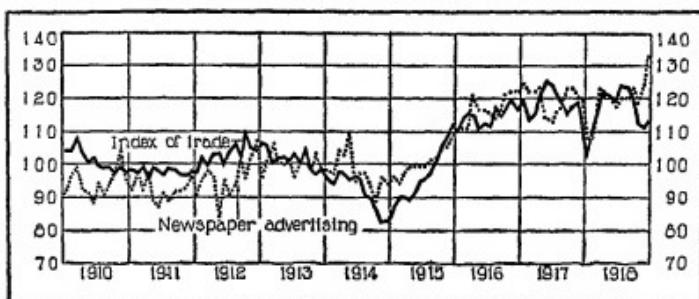


Figure 18: Indexes of Advertising in Newspapers compared with Index of Trade
(Index of Trade corrected for trend and seasonal variation; Advertising Index corrected for seasonal variation only)

of 1923 were somewhat similar in form to those of late 1920. The Chicago curve, after a temporary halt at the very end of 1922, continued its rise until April, 1923, and broke one month before the decline in general business. The decline in the New York index began in January, 1923, and proceeded, gradually and with some hesitation, until the middle of the summer. The low points of both curves (barring the exceptional September drop in New York due to the pressmen's strike) came in July-August, and the movements at the end of the year were the same in both regions. It should also be noted that in 1921 the upturn of the Chicago index occurred in May, whereas that for New York came in the autumn.

A. THE VOLUME OF NEWSPAPER ADVERTISING BEFORE 1919

Figure 18 compares the fluctuations in newspaper advertising during the years 1910-18 with the Harvard Index of Trade. The Index of Trade is used as the standard of comparison for this period because it was especially designed (after 1914 it contains no elements involving the price factor) to represent the movement of business conditions during the war years, when changes in price levels were so sweeping as to render unsatisfactory any index of general business into which price enters as an element.¹ The correspondence between the movements of the two curves, as respects their timing, is very high. The decline of 1914, the

¹"An Index of Trade for the United States," by Professor Persons, *Review*, prel. vol. 5, p. 71. See also Table C-I, p. 611.

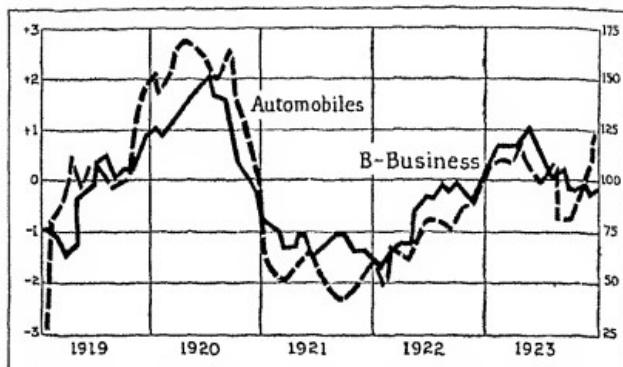


Figure 19: Adjusted Index of Automobile Advertising in Magazines compared with the business curve (B)

strong upward movement which began in 1915, the recession of the summer of 1916, the severe temporary decline at the beginning of 1918, are all shown in the advertising curve at about the same times and in substantially the same forms as in the Index of Trade. Since the advertising curve has not been corrected for trend, as is the case with the Index of Trade, the evident tendency of the first to rise relative to the second reflects the considerable growth element in the volume of advertising during this nine-year interval.

It should be remarked that in the earlier years data were available for fewer papers and some of the important regions were less adequately represented; and therefore, the farther back the advertising index is traced, the less satisfactory it becomes. Great importance should not then be attached to the minor features of the curve in the years before 1915, but even in those years the index shows with fair accuracy the timing of the major fluctuations.

No index of advertising for magazines was constructed for the years before 1919; for, although a considerable volume of data is available, the cyclical fluctuations do not appear to differ from those of the newspaper curve. Moreover, the sharp change in trend in magazine advertising during the early years of the war renders the presentation of a satisfactory index especially difficult.

B. FLUCTUATIONS IN PARTICULAR CLASSES OF ADVERTISING

The curves of advertising by individual trade groups are marked by numerous irregularities of doubtful significance, as is the case also for the indexes pertaining to particular geographical regions. Only the broader features of the movements of these curves should therefore be regarded as indicative of the special conditions affecting advertising by the individual trades. Several of these group indexes are shown graphically in Figures 19 to 24, with the business curve (B) of the Index Chart presented in each case as the standard of comparison.

Automobile advertising in magazines has fluctuations closely similar to those of general business conditions. The facts that the automobile curve has a somewhat wider range of variation than the B curve in 1919-21 and that it was lower early in 1923, are further manifestations of the peculiar experience of magazine advertising already noted. If these points are borne in mind, it is seen that automobile advertising is very highly correlated with general business.

Textile advertising in magazines preceded the business curve (B) from 1919 to early 1921, but the movement since then has been less regular. Most of these irregular swings, except probably the intermediate peak in 1921 and the considerable drop in

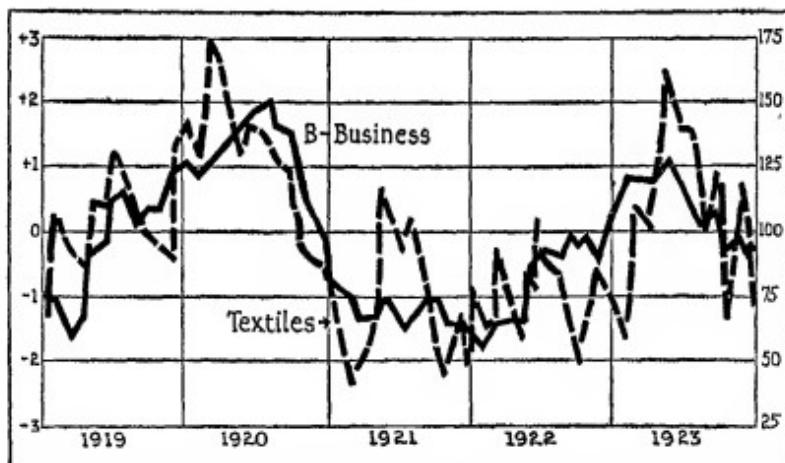


Figure 20: Adjusted Index of Textile Advertising in Magazines compared with the business curve (B)

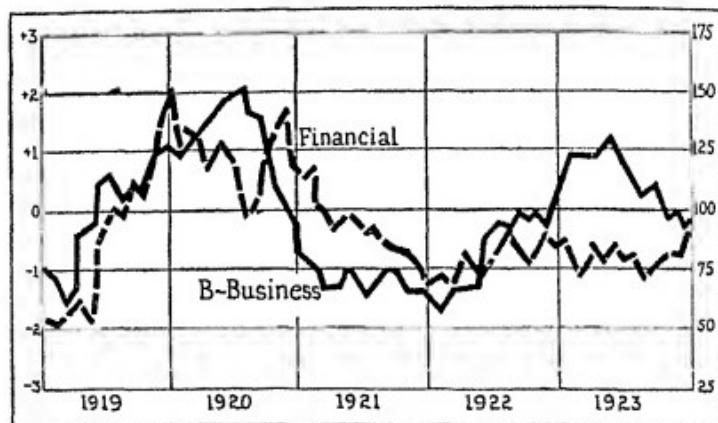


Figure 21: Index of Financial Advertising in Magazines compared with the business curve (B)

the autumn of 1922, have little meaning. Because of the necessity of interpolating data on textiles for some of the magazines during the first three-quarters of 1923, not much importance should be attached to the details of the movement in that year, but it is clear that the year as a whole was well above 1922.

Financial advertising in magazines lagged appreciably after

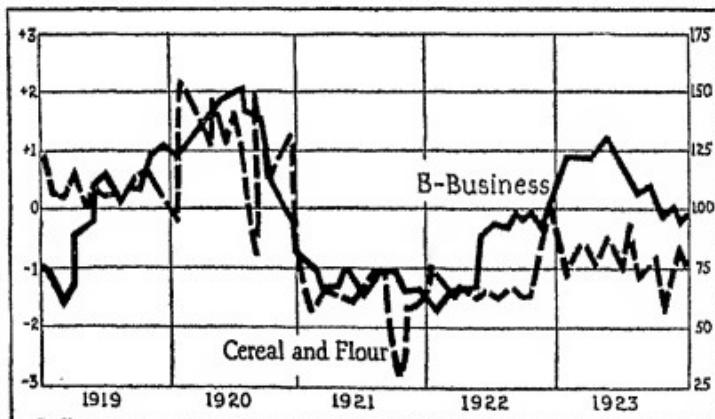


Figure 22: Adjusted Index of Cereal and Flour Advertising in Magazines compared with the business curve (B)

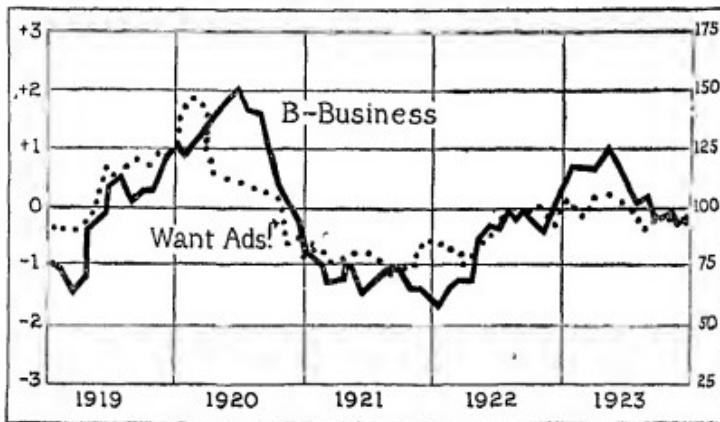


Figure 23: Index of Want Advertisements compared with the business curve (B)

curve B during the first three years of the post-war interval, and did not participate in the recovery which began in the summer of 1922. The index shows, however, the tendency to rise which appears in the total advertising index after September, 1923.

Magazine advertising of cereals and flour moves in general with the business curve. The horizontal position of the curve of this group each year is presumably due to the policy of the trade

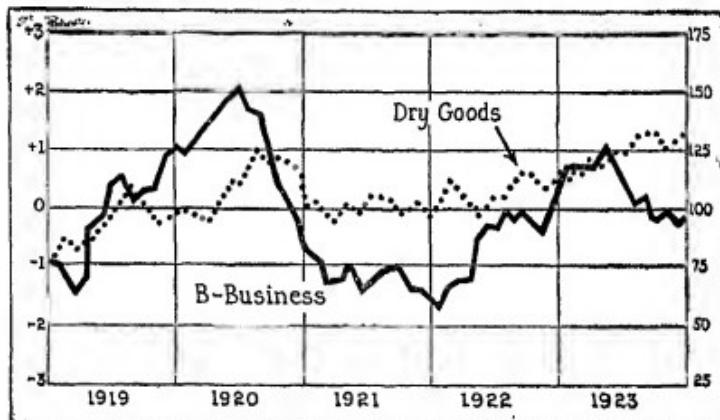


Figure 24: Index of Dry-Goods Advertising compared with the business curve (B)

in contracting for space on an annual basis. It will be seen, however, that the volume of advertising in the cereals and flour group adjusts itself each year to the course of general business.

Want advertisements in newspapers have fluctuations which conform very highly with those of total advertising in newspapers. The drop in 1920 is, however, somewhat more regular in the case of want advertisements, and in fact the regional differences which contributed to the temporary stabilization of total advertising in the summer of 1920 are relatively unimportant in the case of want advertisements.

Dry-goods advertising in newspapers has a marked lag after the curve of general business throughout the five-year intervals. This is distinctly different from the experience of textile advertising in magazines, described above.¹

¹For cases on advertising and the business cycle, see Waite Advertising Agency (credit risk) p. 401; Watterson Stove Company (seasonal advertising) p. 500; Hagen & Dewar (advertising for consignments) p. 502; The Hammert Manufacturing Company (relating advertising to the business cycle) p. 488.

MERCHANDISING AND THE BUSINESS CYCLE

IN view of the important influence of the volume of retail trade upon the demand for bank credit, the Federal Reserve Board and the twelve Federal Reserve Banks in 1919 commenced the collection of retail trade data. The scope of these data has steadily increased during the past four years until the Federal Reserve System now receives monthly reports from the department stores, mail-order houses, and seven groups of chain-store organizations, which together have annual sales of almost \$3,000,000,000.

A. THE TREND OF RETAIL TRADE, 1919-1923¹

The best available measure of retail business is the dollar value of sales, and this information is reported monthly by all co-operating dealers. Among the important factors which influence the value of monthly sales are seasonal and cyclical variations in the volume of business, price fluctuations, long-time growth, changes in methods or retailing, and fortuitous circumstances, such as weather conditions, strikes, and changes in the number of working days. Since the volume of retail trade is particularly subject to seasonal fluctuations, it was deemed advisable to provide for seasonal corrections in presenting the monthly figures.

For this purpose the link-relative method was adopted, since

¹From the *Federal Reserve Bulletin*, vol. 10, p. 17. See also "Fluctuations in Wholesale and Retail Trade," by W. Randolph Burgess, in *The Problem of Business Forecasting*.

On the subject matter of this chapter, see *Problems in Marketing*, by Melvin T. Copeland, and *Retail Store Management Problems*, by Donald K. David, especially Section D of Part IX—"Retail Problems in Relation to General Business Conditions."

In the present volume, see T. T. Lane Wholesale Grocery Company (expansion by consolidation in 1919) p. 326; Allerton Stove Company (price policy in depression) p. 400; Genessee Company (diamond prices) p. 449; Dearborn Stove Company (advice to retailers to prevent overbuying) p. 462; Randolph Shoe and Leather Company (suit against customers who canceled orders in 1920) p. 472; Sillot Wholesale Drug Company (addition of new lines) p. 519; Dorsey Wholesale Drug Company (addition of specialty product) p. 521.

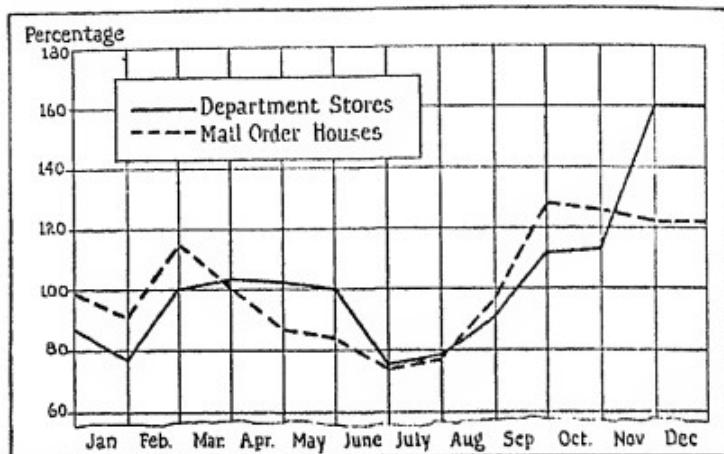


Figure 25: Seasonal distribution of trade at department stores and mail-order houses

it is best adapted to data covering only a short period of time. The steps involved in the use of the link-relative method are: (1) Conversion of the monthly data for the four years, 1919-1922, into a series of link relatives—i.e., percentages of the previous month; (2) determination of the median link relative for each calendar month from the figures for that month in each of the years of the series; (3) conversion of these medians of link relatives into a continuous chain by expressing them as percentages of the median for January; (4) adjustment of the resulting differences between relatives for consecutive Januaries by distributing these differences evenly over the 12 months, and (5) division of each adjusted relative by the average of the 12. The final series of percentages constructed by this method shows the typical distribution of a year's sales over the 12 months.¹ Table 2, on the opposite page, shows this monthly distribution of trade for various lines of retail business, and the chart in Figure 25 compares the seasonal distribution of trade at department stores with that at mail-order houses.

It will be noted that there is a pronounced seasonal movement in the sales of all types of retail business except grocery chains. In most lines business is rather dull in January and

¹See Chapter XI for a discussion of these methods and an explanation of their use.

TABLE 2—SEASONAL VARIATIONS IN RETAIL SALES

Kinds of Stores	January	February	March	April	May	June	July	August	September	October	November	December
Department Stores	87	77	100	104	103	100	75	78	91	112	113	160
Mail-Order Houses	99	91	115	100	87	84	74	77	97	128	126	122
Grocery Chains....	100	95	106	101	98	96	98	97	97	105	102	105
5-and-10c Chains....	72	75	95	95	96	92	92	96	94	108	94	122
Cigar Chains.....	88	86	96	96	101	96	99	97	99	107	100	135
Drug Chains.....	97	91	100	98	98	98	101	100	99	102	94	122
Shoe Chains.....	75	68	96	121	116	106	95	79	92	113	110	129
Music Chains.....	84	85	93	86	82	78	75	88	102	119	121	187
Candy Chains.....	84	85	96	102	97	92	98	101	100	103	95	147

February, is maintained in considerable volume throughout the spring months, becomes dull again in July and August, increases in volume during the fall, and reaches a peak in December. The period of winter inactivity is most pronounced in the case of shoe stores and five-and-ten-cent stores, while the midsummer dullness particularly affects department stores, mail-order houses, and music stores. Candy and drug stores, on the other hand, have a large volume of hot-weather business which causes some growth in their sales during the summer months. Shoe stores have a large expansion of sales in the spring months, and department stores, mail-order houses, five-and-ten-cent stores, and candy stores also show a marked increase in volume of business at that season. Fall buying is large in all reporting lines, and Christmas trade causes a sharp December peak in sales of music stores, five-and-ten-cent stores, and department stores.

In the calculation of the final index numbers for each reporting line the monthly relatives of sales on a 1919 base have been corrected by the use of the seasonal coefficients described above. The adjusted index numbers for each line of retail trade are published in Table C-V, Chapter XII.¹ Indexes of department-store sales are available for 10 Federal Reserve districts and are combined to form a national index by weighting the relatives by the total number of persons employed in retail stores in that district according to the 1920 census.

Comparison of retail sales in different lines since January, 1919, shows some difference in trend. Business was dull in all reporting lines during the early months of 1919, but sales

¹ Below, p. 614.

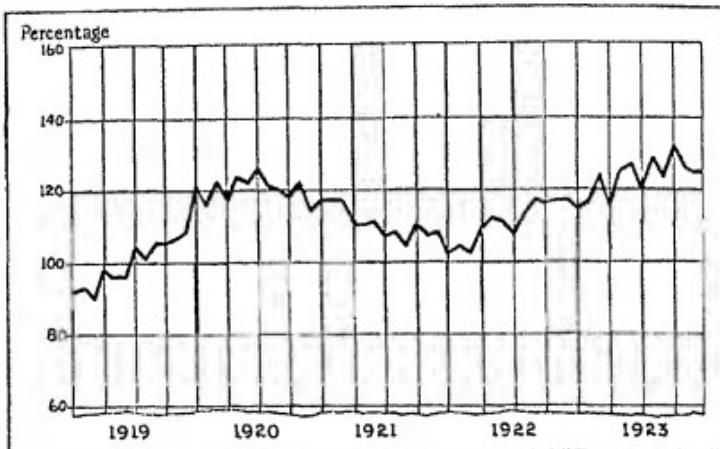


Figure 26: Department-store sales corrected for seasonal variations (Monthly average, 1919 = 100)

expanded steadily throughout the year. This uniformity of trend ended in February, 1920, however, when sales of mail-order houses reached a peak. The business of department stores, cigar stores, grocery stores, and drug stores continued to increase until July, 1920, while sales of mail-order houses, music stores, and candy stores showed a downward tendency. During the last six months of 1920 sales of mail-order houses, department stores, music stores, and grocery stores declined in gross value, but there was little change in the level of buying at other reporting stores. Sales continued to decline at most retail stores throughout 1921, although in March there was a large volume of buying at shoe stores, reflecting the development of new styles of women's shoes, and in the last five months there was a general improvement in sales of musical instruments. The decline in value of sales in 1920 and 1921 was due in large part to reductions in retail prices rather than to decrease in the physical volume of commodities sold.

The expansion of employment and of earnings of industrial workers, together with some advance in prices, caused an increase of sales at most retail stores throughout the year 1922 and in the early months of 1923. Sales of department stores continued to increase during the last half of 1923, but sales of many other

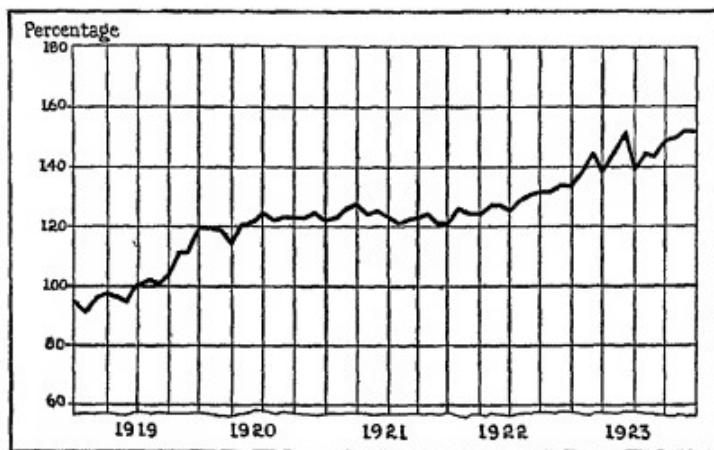


Figure 27: Sales of drug-store chains corrected for seasonal variations (Monthly average, 1919=100)

classes of retailers were slightly smaller in volume than in the first half of the year. Much of the expansion in chain-store sales during the last two years has been due to the opening of new stores, but it is difficult to estimate quantitatively the effect of this factor.

A review of the trend of sales for the nine types of retailers during the past five years indicates that sales of cigar stores and drug stores have fluctuated but little after allowance is made for seasonal changes in demand, whereas sales of chain grocery stores, chain candy stores, and chain five-and-ten-cent stores have shown a steady upward trend throughout the post-war period, largely because of the opening of new unit stores. Sales of mail-order houses and music stores have closely reflected changes in industrial activity and employment, and this is true in a less marked degree of department-store sales. Sales at chain shoe stores have been more irregular than at any other reporting retail establishments, owing to the fact that changes in weather conditions and in styles had a large effect on the volume of buying of footwear.

Data for geographical comparisons on a comparable basis are available for department stores. A comparison of the adjusted indexes of department-store sales in 10 Federal Reserve districts,

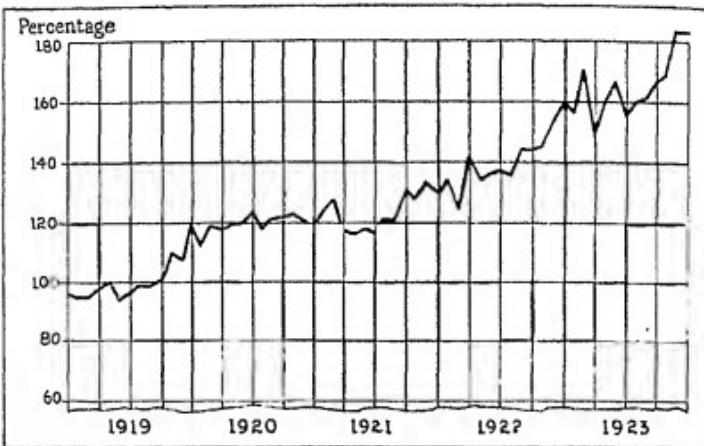


Figure 28: Sales of 5-and-10-cent-store chains corrected for seasonal variations
(Monthly average, 1919 = 100)

published in Table C-VI, Chapter XII, indicates that there has been quite a close correspondence in the month-to-month trend of sales in different sections, although the magnitude of these fluctuations has varied considerably. There was a rather steady expansion in volume of department-store business from January, 1919, to July, 1920, in all of the reporting districts except Chicago and Minneapolis. In the Chicago and Minneapolis districts sales were maintained on a fairly even level during 1919, but showed a remarkable expansion in January, 1920, and the increased rate of buying was maintained throughout most of the following year.¹ In August, 1920, the dollar value of trade commenced to decline and there was a downward trend until March, 1922, in most sections of the country. Although some reduction in sales occurred in all districts during this period, the amount of decrease varied greatly. Sales were reduced by about one-third in the Dallas, Atlanta, and Cleveland districts, where the decrease in retail business was most marked. The decrease in the southern districts may be largely ascribed to the great reduction in the value of the cotton crop, while an important factor in the reduction of sales in the Cleveland district was the

¹The indexes of these districts are so different from the general picture that it seems doubtful if they give a true picture of conditions in 1919 and 1920.

reduction in employment and wages at steel plants, rubber factories, and other manufacturing establishments. Trade showed very little decrease in value during 1920 and 1921 in the San Francisco district and probably actually increased in physical volume.

Throughout most of the years 1922 and 1923 there has been an upward trend in sales of department stores in all sections of the United States far in excess of the increase in retail prices, so that it is apparent that there has been an expansion in the physical volume of business. The largest increases in sales have occurred in the Chicago, Cleveland, and Philadelphia districts, and in general there has been since 1919 a considerable increase in sales in the industrial sections of the East and Middle West, while sales in southern districts and in the agricultural sections of the West are at about the same level as four years ago.

B. SEASONAL VARIATIONS IN DEPARTMENT-STORE STOCKS¹

For several years the Federal Reserve Board and the 12 Federal Reserve Banks have received monthly reports of stocks held by certain classes of retail dealers. From the statistics showing the dollar value of stocks held by 286 department-stores on the last day of each month, from January, 1919, to date, an index of retail stocks has been constructed.

Since the figures show well-defined seasonal changes in the vol-

TABLE 3—MONTHLY VARIATIONS IN DEPARTMENT-STORE STOCKS
(Average Month = 100)

Federal Reserve District	January	February	March	April	May	June	July	August	September	October	November	December
Boston.....	91	94	100	103	101	96	93	95	106	112	113	96
New York.....	90	95	103	104	100	95	92	97	106	110	113	95
Philadelphia.....	91	94	101	101	97	97	94	98	108	111	111	97
Cleveland.....	86	93	101	102	101	98	94	99	107	111	113	95
Richmond.....	85	93	106	102	99	95	93	98	112	115	113	89
Atlanta.....	90	97	100	101	96	96	95	100	109	113	112	91
Chicago.....	90	92	98	105	100	95	94	104	106	112	111	93
Minneapolis.....	88	96	102	101	104	99	97	102	106	108	107	90
Dallas.....	86	94	100	99	101	95	94	106	114	114	112	85
San Francisco.....	92	95	101	102	100	95	96	102	106	109	110	92

¹ From the *Federal Reserve Bulletin*, vol. 10, p. 189.

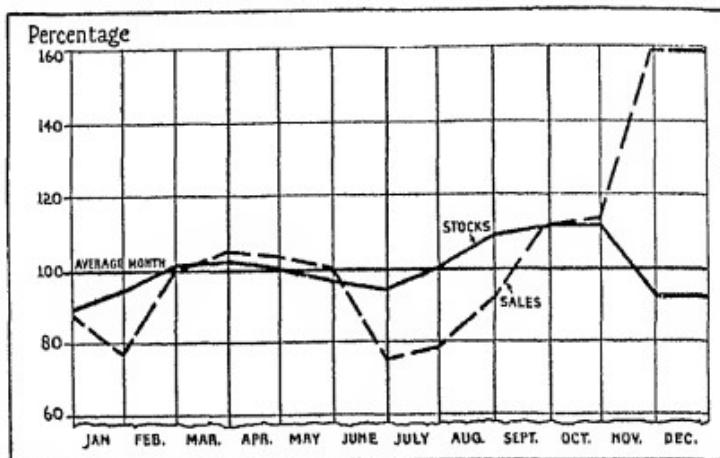


Figure 29: Comparison of the average seasonal movement of stocks and sales at department stores

ume of department-store stocks, allowance has been made in the construction of the index for the usual seasonal movements. Average monthly variations in department-store stocks for the 10 Federal Reserve districts for which statistics are available are shown in Table 3 on the preceding page.

These figures indicate that changes in the volume of retail stocks are clearly defined and regular in all reporting districts and that the seasons for increasing or decreasing inventories correspond closely in different sections of the United States. Stocks decline during December and January in almost all districts; increase in February and March; are at a moderately high level during April and May; decline during June and July; increase during August, September, and October to the maximum for the year; and remain at about this high level throughout November. These changes in stocks are shown graphically in Figure 29 on this page, together with the seasonal variations of sales at department stores. Fluctuations in stocks are smaller than in sales; stocks are highest in the months when sales are highest and lowest during the periods when sales are also at a low level.

In the construction of the combined index, figures for each district were weighted by the number of people employed in retail trade. In the chart reproduced in Figure 30 this combined index

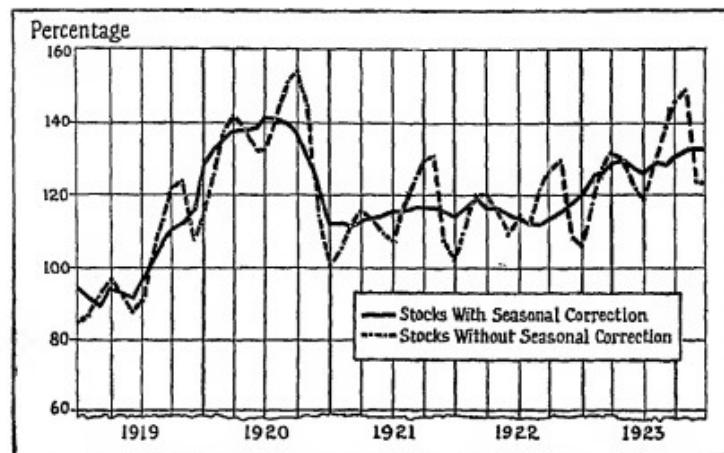


Figure 30: Chart showing the trend of department-store stocks during the past five years, both with and without seasonal correction.

of retail stocks, corrected for seasonal variations, is compared with an index which makes no allowance for seasonal changes.

The seasonally corrected index shows that there was a fairly steady increase in the value of retail stocks from July, 1919, to August, 1920, which may be partly ascribed to rising prices. The rapid decrease in value of inventories which continued from September, 1920, until January, 1921, also reflects in part the influence in price change. In the period from February, 1921, to August, 1922, stocks were at a remarkably constant level, and fluctuated chiefly with the seasonal requirements of business. In September, 1922, department stores began to increase their stocks in response to the growing volume of sales and this increase continued to the end of 1923.

Analysis by Federal Reserve districts of changes in the value of merchandise stocks indicates that while there are differences in month-to-month movements, there is close correspondence in trend.¹ During 1919 and the first half of 1920 increases in inventories occurred in all Federal Reserve districts and were particularly large in the Chicago, Dallas, and Cleveland districts. Department-store stocks in the Philadelphia, Boston, and Minneapolis districts, on the other hand, showed only about one-half

¹Table C-VII, p. 616.

as large an increase. The decline in stocks during the last half of 1920 was remarkably uniform in eight of the reporting districts. Stocks in the Richmond district declined somewhat more than stocks in other sections, while stocks in the Philadelphia district showed the smallest reductions.

During 1921 and the first half of 1922 there was some divergence between districts in trend of stocks. Inventories continued to decline in the Cleveland, Atlanta, and Dallas districts; remained at a fairly even level in the New York, Richmond, Chicago, Minneapolis, and San Francisco districts; and showed a rather distinct upward trend in the Boston and Philadelphia districts. In the latter half of 1922 and in the first half of 1923 stocks on retail shelves were increased in all reporting districts, the increase being most marked in the Philadelphia and Chicago districts. Stocks showed further increases in the autumn of 1923 in the Boston, New York, Philadelphia, Cleveland, Chicago, Dallas, and San Francisco districts, but were smaller in the Richmond and Atlanta districts. During December and January there was some reduction in total inventories, due to decreases in the Boston, New York, Philadelphia, Richmond, Chicago, and Minneapolis districts.

VI

BOND YIELDS AND MONEY RATES¹

BOND prices usually advance during the phase of the cycle in which business is recovering from depression; they usually decline during the ensuing phase of prosperity, such as has characterized business since last autumn. This is clearly indicated by the experience of recent business cycles. Thus, a decline in bond prices began in the fall of 1905, while business remained prosperous well into 1907; bond prices turned downward in June, 1909, while business prosperity lasted until after March, 1910; and bond prices began to fall early in 1912, while business remained prosperous until the following winter. Bond prices reached the peak of their upward movement in September, 1922, and the decline after that date was part of their normal cyclical movement downward during a period of active business.

In the following discussion bond yields are used rather than bond prices. The prices of bonds, because of differences in nominal rates and maturities, cannot be directly averaged to obtain a ruling price, while in the calculations of yields adjustments for such differences are made. Bond yields are themselves interest rates, and have a close relationship to other interest rates; moreover they may be easily averaged, and a ruling rate thus obtained. The yield is a computed figure based on the current market price of a bond, assuming that the stipulated interest, and the principal at the time of maturity, will be paid. The nominal rate of interest fixed on bonds at the time of issue does not change. Changes in yield, therefore, result from changes in the market price of bonds, since the other factors determining yield are fixed. Statements regarding the direction of movement of bond yields, or their high or low points, apply in reverse to bond prices. The statement that bond prices are falling is thus equivalent to the statement that bond yields are rising, and *vice versa*. A 4% bond, due in 1995, selling at 93 in August,

¹*Letters*, vol. 2, p. 111, (April 28, 1923) with minor editorial changes.

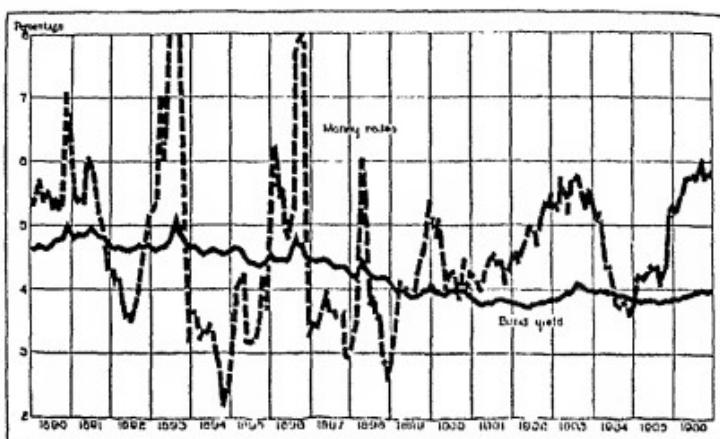


Figure 31a: Bond yields and rates on 60- to 90-day commercial paper, monthly, 1890-1906. The trend of bond yields (and bond prices) changed early in the present century (1901-1902).

1922, would yield 4.32% if held to maturity; the same bond in March, 1923, selling at 86.10, would yield 4.67%.

The purpose of this discussion is to compare the fluctuations of bond yields and short-time money rates, with special reference to such movements since the end of 1918. A comparison will also be drawn between the market movements of the prices of bonds of near and distant maturities.

The index of the yield of 10 railroad bonds which is used for the years 1919-23 is constructed in similar fashion to that previously published.¹ For the years 1911-1918 the old index has been revised. Details as to the construction of the new bond index appeared in the *Review of Economic Statistics* for July, 1923.

The yields of railroad bonds, rather than those of other classes, are used, because they represent most satisfactorily pure long-time interest rates. Industrial bonds are more influenced by the element of risk, while state and municipal bonds are influenced by tax exemptions, and federal bonds by large financing and tax exemptions. Railroad bonds fall into the general class of public utilities and are selected as representing the most seasoned group of public utility issues.

¹*Review*, prel. vol. 1, p. 45.

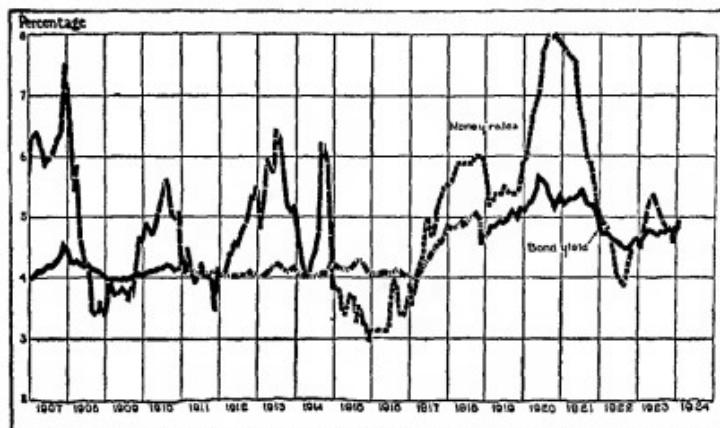


Figure 31b: Bond yields and rates on 60- to 90-day commercial paper, monthly, 1907-1924 (Bond yields revised 1911-1923, commercial-paper rates corrected for seasonal variations 1890-1914; 1923-date)

A. COMMERCIAL PAPER RATES AND BOND YIELDS

Demand for loans for long- and short-time use may be regarded as competing in the money market for the use of funds. For this reason, bond yields and short-time interest rates in general fluctuate similarly, although showing many significant differences. These are illustrated in Figures 31a and 31b, which compare the movements of 60-90 day commercial paper (corrected for seasonal variation) and that of the yield on 10 railroad bonds for the years 1890-1924.

1. Bond yields are, on the average, lower than rates on commercial paper. The average of the monthly yield on 10 railroad bonds for the years 1890-1922 was 4.32%, one-half of 1% below the average of the rates on 60-90 day commercial paper for the same years. Only during relatively short periods are bond yields above market rates for commercial paper of this class.

2. Examination of the course of bond yields from 1890 to date reveals only a negligible seasonal variation. In contrast to this, commercial paper rates showed a decided and consistent seasonal variation during the years prior to the establishment of the Federal Reserve System. They were usually highest in the fall

(October), fell off during the winter months, rose in March, and then declined to the lowest point of the year in June. During the war and to the end of 1921, however, under the combined influence of the Federal Reserve System and the disturbed conditions of these years, seasonal movement seemed to be lacking. More recently, however, a certain amount of seasonal variation has been in evidence.

3. The cyclical movement of bond yields is much less than that of commercial paper rates. This fact is illustrated by Table 4, below, which compares the changes in the rates on commercial paper and bond yields during three periods of marked fluctuations. Thus, in the years 1919-20 the cyclical variation in 60-90 day commercial paper was almost 3½ times as great as that in the yield of 10 railroad bonds, while in the earlier periods it was much greater. Although the cyclical fluctuations in bond yields are thus very much less than those in commercial paper rates, they are nevertheless well marked and directly related to changes in other interest rates and general business conditions. When the business cycle enters the prosperity phase, the demand for funds for industrial enterprise becomes increasingly heavy. Commercial paper rates tend to rise. Investments in bonds are disposed of in the open market by banks, industrial concerns, and others to secure funds for business purposes, and as a result bond prices fall—that is, bond yields rise. During the liquidation and depression periods of the business cycle, on the other hand, the inactivity of trade decreases the demand for commercial loans, and funds are released for the purchase of bonds. Commercial paper rates fall, bond prices rise and yields fall. At such a time, commercial paper rates fall below bond yields, and it thus becomes more profitable to buy bonds than to loan money for short term transactions. Cheap money, in turn, tends to stimu-

TABLE 4—FLUCTUATIONS IN COMMERCIAL PAPER RATES
AND BOND YIELDS
(Unit: 1%)

Period	RATES ON 60-90 DAY COMMERCIAL PAPER			YIELD ON 10 RAILROAD BONDS		
	High Point	Low Point	Spread	High Point	Low Point	Spread
1893-94	9.98*	2.16*	7.82	5.07	4.53	.54
1903-05	5.78*	3.69*	2.09	4.07	3.80	.27
1919-20	8.00	5.19	2.81	5.66	4.84	.82

*Corrected for seasonal variation.

late business and leads to a repetition of these movements of business and interest rates.

4. The lowest points in the cyclical movement of bond yields lag behind similar points for commercial paper rates. In 1904-05, the interval between the two amounted to 12 months; in 1908-09, to 4 months; in 1911-12, to 3 months; and in 1922, to 1 month. On the other hand, three of the four peaks in the movement of yields and money rates during the period 1903-14 occurred in the same month, while in one instance (in 1907) the peak of bond yields anticipated that of money rates by one month.

B. RECENT COURSE OF BOND YIELDS AND INTEREST RATES

The course of bond yields and money rates, 1919-1923, is presented in Figure 32. Bond yields are the new index for 10 railroad bonds, and commercial paper rates are the actual monthly averages for 60-90 day paper on the New York market. These two statistical series are presented on the same scale in the upper chart. In the lower chart, paper rates are shown on the same scale as in section A, but the scale for bond yields has been altered in order to magnify ($2\frac{1}{2}$ times) the fluctuations of bond yields, and thus to facilitate comparison of the two curves.

As is evident from the chart, fluctuations in bond yields preceded similar movements in short-time rates in 1919-20, thus reversing the usual sequence of these movements. In 1919 commercial paper rates rose tardily as a result of the maintenance of low rediscount rates by the Federal Reserve System for the purpose of facilitating Government financing. Bond yields moved upward more promptly, reaching their high point, 5.66 $\frac{1}{2}$, in May, 1920, three months before paper rates reached peak.¹ Bond yields declined from June to October, 1920, but in the following months moved upward temporarily, and did not fall below the level of October, 1920, until November, 1921. In the meantime commercial paper rates moved down slowly until May, 1921, when a very rapid decline set in. This, and the later movement of bond yields—which began to decline sharply in November, 1921—restored the usual relationship between the two; so that the rate on 60-90 day commercial paper reached low (3.88%)

¹Eight per cent in August. They declined slightly in September, but touched 8% again in October.

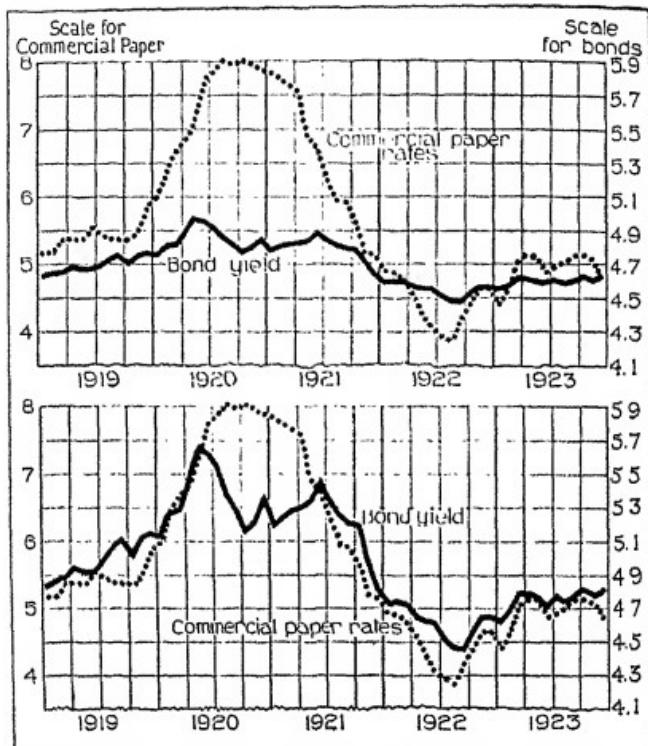


Figure 32: Rates on 60- to 90-day commercial paper and bond yields, monthly 1919-1923; upper chart, identical scales for money rates and bonds; lower chart, different scales to show cyclical movements (Unit: 1%)

in August) one month before bond yields (4.46% in September). Both rose in the subsequent six months.

It is noteworthy that for the months of April, 1922, to February, 1923, rates on 60-90 day commercial paper remained below bond yields. As may be seen from Figure 31, the same relationship obtained in May and September, 1900; from July to December, 1904; from July, 1908, to September, 1909; and, for all but two months, from March to November, 1911. This situation

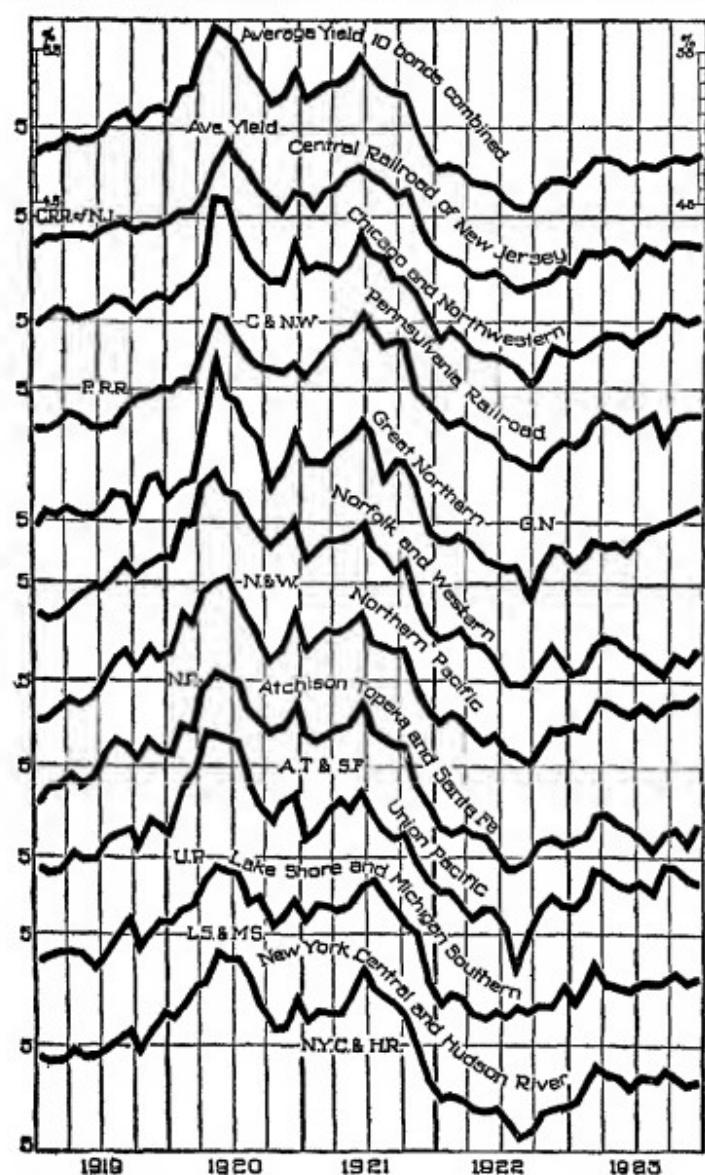


Figure 33: Yields on 10 long time bonds, 1919-1923

in each case preceded or accompanied periods of business recovery, and preceded the following peak of bond yields by intervals of irregular length, the shortest of which (September, 1909, to July, 1910) was 10 months, and the longest 3 years (September 1900 to August, 1903).

C. LONG AND SHORT TERM BONDS

Movements in prices in 1922-23 show clearly the difference between bonds approaching maturity and those with distant maturities.

TABLE 5—FLUCTUATIONS IN THE PRICES OF TYPICAL RAILROAD BONDS SINCE JANUARY, 1922

Bond	Long Term Bonds			Subsequent	
	Jan. 1922	High 1922*	March, 1923	Percentage Rise	Percentage Fall
<i>N. Y. Central & H. R. (dollars per \$1,000 bond)</i>					
Gold Mort. 3½s, 1997.	762	808	740	0	10
A. T. & S. F. Gen. 4s, 1995	875	930	861	6	8
Central of N. J. Gen. 5s, 1987	1,050	1,100	1,051	5	4
Penn. Cons. 4½s, 1960...	945	1,004	951	6	5
N. P. Prior Lien 4s, 1997.	856	903	829	5	8
<i>Short Term Bonds</i>					
Bond	Jan. 1922	High 1922	March, 1923	Subsequent	
				Low, March, 1923	Percentage Rise
<i>C. B. & Q. Neb. Exten. 4s, (dollars per \$1,000 bond)</i>					
1927	948	973	960	3	1
A. T. & S. F. East Okla. Div. First 4s, 1928.....	917	966	916*	5	2
Nash. Chat. St. L. First Cons. 5s, 1928.....	982	1,016	999†	3	2
Oregon & Calif. (S. P.) First Gen. 5s, 1927....	966	1,011	987	5	2
U. P. Ten Year Secured 6s, 1928	1,028	1,055	1,039	3	2

*January, 1923. †December, 1922.

turity dates.¹ Prices of the first class tend to remain relatively stable, since the expected repayment of the principal is the ruling factor, rather than the yearly return on the bond. Table 5, on page 80, shows the fluctuation in price from January, 1922, to June, 1923, of (a) five of the long term railroad bonds which are included in our index of bond yields, and (b) five railroad bonds, maturing in 1927 and 1928.

For those of distant maturity, the gain between January, 1922, and the high of that year amounted to 5% for 2 bonds and 6% for 3; while for bonds of early maturity, it amounted to 5% for 2 and 3% for 3. The losses to the subsequent low points, on the other hand, amounted to 10% for 1 of the long term bonds, 8% for 2, and 4% and 5% for the remaining; and for the short term bonds, to only 2% for 4, and 1% for the remaining bond. Thus, the gain in value to the high points of 1922 was somewhat less for short term than for long term bonds, and the loss in value since very much less. The stability of the prices of bonds having only a year or two to run would be even greater than those which we have chosen. Thus short term bonds will decline less than long term while the market is moving downward—that is, as long as business is prosperous and interest rates remain firm or advance.

D. COMPARISON OF YIELDS OF EARLY AND DISTANT MATURITIES²

For comparison with the index of yields of distant maturities, the Harvard Committee computed an index for 1922-23 of yields of five high-grade bonds of early maturity.³

From the price standpoint early maturities are more inflexible than long term bonds; from the angle of yields, long term bonds are the more inflexible. As the maturity date draws near, a very small change in the price of a bond is reflected by a relatively large fluctuation in the yield, or, conversely, a relatively large fluctuation in the yield of a short term bond may be the result of only a small difference in the price.

¹The Harvard Committee's Index of bond yields comprises only those having over 35 years to run. (Table E-II, Chapter XII, p. 623.) The relationship of the fluctuations, yields, and prices differs radically between the two classes of bonds.

²From "A Monthly Index of Bond Yields, 1919-1923," by W. Floyd Maxwell and Ada M. Matthews, *Review*, prel. vol. 5, p. 212.

³See page 83 for Footnote.

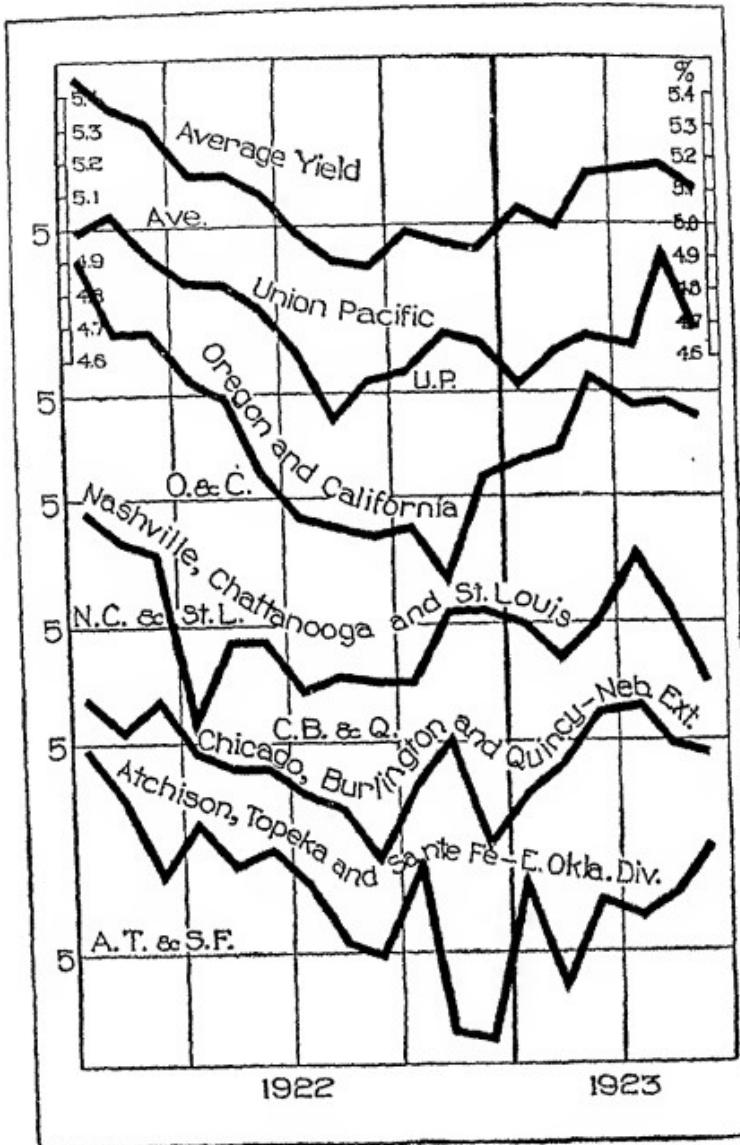


Figure 34: Yields on five short time bonds, 1922-1923

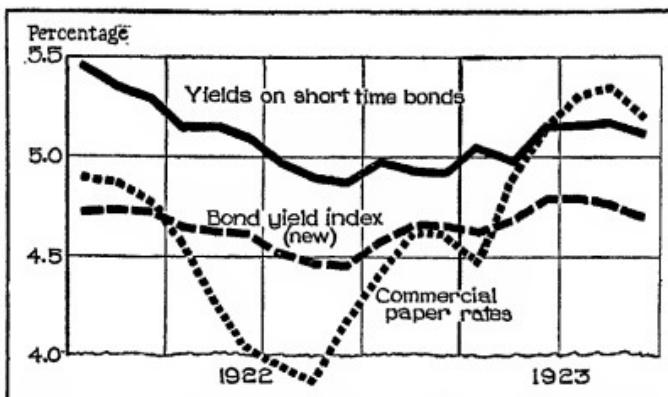


Figure 35: Comparison of long time bond yields, short time bond yields, and 60-to 90-day commercial paper, January, 1922, to March, 1923 (1923 corrected for seasonal variations)

In the case of distant maturities, however, the situation is different; for, although prices and yields vary inversely,¹ the

(See reference for Footnote on page 81)

The following table gives the descriptions and maturity dates of these bonds.

Company	Description of Bond	Nominal Rate	Date of Maturity
Union Pacific Nashville, Chattanooga & St. Louis	Ten-year secured, gold First consolidated mortgage, gold	6%	July, 1928
Oregon & California	First mortgage sinking fund, gold	5	Apr., 1928
Atchison, Topeka & Santa Fe	East Oklahoma division first mortgage, gold	5	July, 1927
Chicago, Burlington & Quincy	Nebraska extension sinking fund, currency	4	Mar., 1928
		4	May, 1927

As the criteria underlying the choice of these bonds are the same as those listed early in the study (except for the difference in time of maturity), and as the method of averaging monthly high and low prices and computing yields is similar, these considerations are not presented again in detail. The movements of the long-time index during 1919-1923 are shown in Figure 33, p. 79.

1 When short term bonds are quoted below par, the relationship of price to yield is at times anomalous. It is entirely possible for the yield to increase at the same time that the price of the bond increases. Although rising prices normally result in declining yields, the force of approaching maturity and its consequent increase in yield may dominate so that the net result is a rise in price accompanied by an increase in yield.

yield is much less sensitive to a given change in price.¹ This constitutes an important difference between the two types of securities.

TABLE 6—YIELDS OF FIVE EARLY MATURITIES AND AVERAGE YIELD: MONTHLY, 1922-23

Year and Month	Union Pacific 6% 1928	Nashville, Chattanooga, & St. Louis 5% 1928	Oregon & California 5% 1927	Atchison, Topeka, & Santa Fe 4% 1928	Chicago, Burlington, & Quincy 4% 1927	Short Term Bond Index
1922	%	%	%	%	%	%
January . . .	5.19	5.31	5.72	5.61	5.14	5.46
February . . .	5.54	5.26	5.19	5.46	5.04	5.36
March . . .	5.12	5.22	5.10	5.23	5.12	5.30
April . . .	5.31	4.70	5.30	5.10	4.96	5.15
May . . .	5.33	4.95	5.20	5.20	4.92	5.15
June . . .	5.26	4.95	5.07	5.30	4.92	5.10
July . . .	5.11	4.80	4.94	5.10	4.85	4.98
August . . .	4.92	4.84	4.91	5.04	4.80	4.90
September . . .	5.04	4.83	4.89	5.00	4.65	4.88
October . . .	5.06	4.83	4.90	5.25	4.80	4.98
November . . .	5.18	5.03	4.75	4.75	5.00	4.94
December . . .	5.15	5.03	5.06	4.74	4.69	4.93
1923						
January . . .	5.03	5.00	5.11	5.22	4.84	5.04
February . . .	5.12	4.89	5.14	4.90	4.92	4.99
March . . .	5.16	4.97	5.34	5.16	5.08	5.14
April . . .	5.14	5.20	5.26	5.11	5.10	5.16
May . . .	5.41	5.03	5.27	5.17	4.98	5.17
June . . .	5.10	4.82	5.24	5.32	4.90	5.11

¹ For example: The average price of the five short term bonds in January, 1922, was 96.8 and in September, 1922 (the extreme high), 99.7. The average yield of these same five bonds was 5.15% in January and 4.88% in September. That is, a rise of 2.9 points in the average price of the short term bonds produced a loss of .57% in the average yield. The average price of the ten long term bonds in the new index was 89.0 in January and 93.6 in September, and the corresponding average yields were 4.72% and 4.46% respectively. In this case, a rise of 4.6 points in the price of the long term bonds between these same months showed a loss of only .26% in the yield. Roughly, then, although the actual rise in the price of the short term bonds was little more than half the rise in price of the long term bonds in the same period, it brought about more than twice as large a decline in yield.

Figure 35 shows the yields of early maturities and distant maturities, together with money rates. The significant fact in the comparison is the higher yield of short time bonds compared with long time bonds. The monthly average of the former in 1922 was 5.09%, of the latter 4.61%. The wider fluctuation of the yields of early maturities, which has been mentioned above, is also apparent. These differences indicate the desirability of shifting funds, at certain phases of the business cycle, from one form of investment to the other.¹

¹The following cases illustrate the principles discussed in this chapter: Pennsylvania Security Trust Company (handling the bond account of a commercial bank) p. 185; Peoples Bank and Trust Company (investment of surplus funds) p. 170; Clement & Company (sale of bonds by investment house) p. 203. The offering of the various securities of the Goodyear Tire & Rubber Company at the time of the reorganization was very skilfully timed with reference to conditions in money and securities markets (p. 224).

THE CONTROL OF AN INDUSTRY IN THE BUSINESS CYCLE¹

HUMAN nature decrees that every executive shall believe his business to be surrounded by more difficulties and intricacies than could possibly exist in any other enterprise. Claiming no exception to the human rule, I am confident there is no more delicate problem of production and inventory control than that of the Walworth Manufacturing Company. As producers of pipe fittings, valves and tools made of cast iron, malleable iron, brass, and steel, we are required to have ready for shipment at any time something over 23,000 different finished articles. In terms of completed parts this means several times that number of items.

Our product goes to the building trades, to manufacturing plants, to the railroads, shipbuilders, oil fields, and in fact every line of activity, in quantity. Although new construction of buildings and equipment of all kinds plays a large part in our demand, by far the greatest tonnage is used in repair work, and therefore we are unusually subject to the necessities of quick delivery. We distribute this product, approximately 50,000 tons of finished material, through six of our own branches located in the largest distributing centers and through large jobbing and manufacturing customers.

We have two factories, one in South Boston which produces under normal conditions something over 1,000 tons of finished goods a month, and in Kewanee, Illinois, a larger unit producing normally something over 3,000 tons monthly. South Boston Works ships to the territory east of the Alleghenies and to our export customers; Kewanee Works covers the territory from the Alleghenies to the Pacific Coast. In general, the assortment of material produced at both plants is approximately the same.

At the time of my becoming president, the Walworth Manufacturing Company in 1913 had only one plant, located in South

¹Mr. Howard Coonley, president of the Walworth Manufacturing Company, contributed this discussion to the *Harvard Business Review*, vol. 1, p. 385.

Boston, and its sales were approximately 15% of our present volume. Since the number of items which it was producing and storing was the same as at present, its production and inventory problem was fully as difficult. The methods used in ordering material were characteristic of those followed generally at that time—namely, to give a blanket manufacturing order to the superintendent when a shortage occurred and leave to his off-hand decision the determination of the quantity to produce. There was available no background of records on which to predicate a planning system. Figures showing the company's condition were available only once a year. No estimate was possible of the current monthly profits and there was no classification of the product.

A. DEVELOPMENT OF COST ACCOUNTING BY THE WALWORTH MANUFACTURING COMPANY

Realizing the vital necessity of a more definite system of accounts to make possible an accurate method of control, we determined as a first step to divide our product into major classes and to use this classification in all our accounting. As a second step we decided to reconstruct our sales and production records over as long a period as was practical, and to use this information as a basis for a budgetary system. The necessities of the war and the changes in the company's activities delayed the time at which our budgetary system could be started and it was not until the year 1922 that we obtained the full advantage of control methods which are now a permanent and basic part of this company's policy.

For purposes of both accounting and production control, we had decided to divide our product into 15 groups and to break these groups down into 38 classes. From the time materials are put into production to the time they are billed to our customers, these classifications are maintained. By use of these classifications through the summary accounting records, we can follow the movement of goods, through raw material and work in process, until they have passed out of our control into the market. The simplicity of such a cost accounting system is one of the great aids to interpretation of the productive processes going on within the company.

CHANGES IN ORGANIZATION

While this simple cost accounting system was thus being developed, there was also in progress a simplification of the organization. It was not an easy matter at first to define clearly the functions of the major executives. Of course, as is the case with many companies who first approach such a problem in organization, it is found that many persons are attempting to do the work which others feel should come within their jurisdiction. Lack of definition is bound to bring about much overlapping of duties. When this overlapping was eliminated from the major functions, we arrived at an organization showing three line vice-presidents—one in charge of production, one in charge of sales, and a third vice-president in charge of all administrative functions. And since our business has many technical aspects, a fourth vice-president in staff capacity heads up all functions pertaining to engineering. There are also, of course, the other usual corporation officers—secretary and treasurer. Therefore, six officers in contact with the president's office assume control of all branches of the business, each being given full authority in the direction of all activities within his control, and being held responsible for financial results, which our revised accounting system makes it possible to segregate.

It was naturally necessary in turn to break down the activities coming within the jurisdiction of each of these vice-presidents, so that every subordinate would know his authority and responsibility. The major executives under the vice-president in charge of production, for instance, are the Boston Works manager and the Kewanee Works manager. Under each of these managers is a complete but distinct organization, and the accounting system is arranged to correspond with the authority of these officers. Each works has its own accounting records based upon the division into 15 groups and 38 classes, so that we may check costs and efficiencies between the two works on a comparable basis.

This plan of organization and the development of an adequate cost accounting system had but one ultimate end in view. The company, which was developing rapidly, must for control purposes be just as easy to comprehend as the original smaller organization. Responsibilities must be so clearly marked that there could be no sidestepping the results as indicated by the

accounting records. And thus was laid the foundation for a budgetary control which should make possible a ready indication of the present status of the business and its future trend.

B. RELATION OF WALWORTH BUSINESS TO THE BUSINESS CYCLE

Now, as this development was progressing, the facts about the business, which had been simply guessed at before, began to accumulate and shape themselves into definite "rules of the business." We began to see that there was some rhyme and reason behind the past fluctuations in the business, and before long it seemed wise to inaugurate a statistical section which could run over the gathering figures and interpret them. Just how extensive the activities of this section would become was not definitely laid down. At first it was simply thought that something could be accomplished toward finding out where the Walworth business stood with relation to general business. Some publicity was being given at that time by certain economists to the theory that each business had its own cycles just as distinctly as general business. These economists suggested that any industry might find out its own cyclical changes and learn whether its movement was severe or easy. Furthermore, they suggested that the individual industry would probably find that its cycles corresponded in point of time with the cycles of business in general. It might discover that its particular volume reached its high or low point earlier than general business; or again that the general business situation developed a definite number of months in advance of its own varying conditions. But the first and most important suggestion they made was that if each business knew that it was affected in response to general business conditions, and could establish its position with regard to the general business movement, it would have a sure index of changes of policy that should be made to meet its own changing conditions.

The suggestion was in line with our own attempts at more definite control, for with the newly established organization and accounting methods to give us the facts, we needed only an indicator to tell us how to make maximum use of them. So the planning and statistics section had cut out for it an initial field of activity. The facts already at hand, compiled by the accounting department, became its raw material, and even though

the accounting plan had not yet been fully developed, there was much work that could profitably be done.

The first experiments showed that a Walworth cycle did exist and that it was very marked. A curve representing this cycle action by a very simple statistical process was worked back as far as 1890 on the basis of records available in the treasurer's office. There seemed to be a fairly logical sequence over a period of a few years, and this sequence seemed to repeat itself continuously. It is true that there was no definite clock-like action in the length of time consumed by our business cycles, but there was a very definite cycle movement. The theory of the economists seemed to be working itself out in practice.

There had been for some time many advice letters coming in from business-forecasting agencies, which had been read with the usual casual interest by most of the executives. The planning and statistics section requested that all these letters, after they had been read, be forwarded to its files so that at leisure they might be reviewed and made further use of. Instead of going into the waste-baskets of the executives, these letters became the textbooks of our investors. As the staff became better acquainted with the good advice available, it seemed unprofitable not to make some tangible use of it. A very short study, in fact, made it apparent that our effort would be successful.

In every instance we found some similarity between the Walworth business curve and that of the barometers under investigation. The variation was greater in some instances than others, but there were in each some comparable elements. We did not, at any time, hope to find any curve which exactly paralleled our own. But we felt that if we could discover one which in the past had preceded or followed our own by a definite period, we could then accept the advice which that agency might give and adjust our plans forward or backward the exact number of months suggested by past experience. It was essential, however, that the number of months be very definite in order to provide a sound basis for policy planning and control purposes.

It was with great satisfaction, therefore, that we began our study of the Harvard Economic Service issued by the Harvard University Committee on Economic Research. Their method of presenting business cycles seemed at first a little technical, but a short study proved it easy to comprehend, and their charts

indicating current status of business were much more definite in their forecasts than any others we had found. It was but a simple matter to change our cycle curve to a form which would enable a comparison with the Harvard B curve. The chart in Figure 36 illustrates how this was accomplished. Figures for the same 12 pre-war years covered by the Harvard B curve were available. The war threw all barometers so far out of line that we did not attempt comparison during that period, but picked up the thread in 1919. It is generally conceded that more is to be learned with reference to normal business cycles from the pre-war years than from any later ones, and fortunately our records, though meager, supplied sufficient data to plot our line back to 1903.

There are three index lines on the Harvard chart and it would have been possible to attempt to compare our curve with any one of these. Had our business been speculative in nature, it would have been better to attempt correlation with the Harvard line representing speculation; or had it been primarily financial, we would have turned to the banking index for our comparison. But our industry is one of the bread and butter type of average business, so that it was evident from the first that the composite of the factors that control general business, the Harvard B line, was the one we should follow. The chart will show that our study was rewarded by finding an astonishing similarity between this B curve and the Walworth line.¹

It was probably a matter of coincidence, that our high point comes in almost exactly the same month every time as the B line high point; and our low point is reached in almost the same month as the low point of the Harvard B line. The only exception to this seems to be that in the years 1903-1905 we had two low points, with the "half high" point in the middle of 1904. We

¹ The numerical values of the curves of the Harvard Index Chart (pre-war and post-war) are shown in Tables A-II and A-III of Chapter XII, pp. 604 and 605. For comparisons during the war period either the Harvard Index of Trade may be used or the Index of General Business Activity of the American Telegraph and Telephone Company, Tables A-I and C-I, p. 603 and 611, respectively. The latter index is available back to 1877, and is useful for comparing statistics for years before 1903. All of these statistics have been corrected for seasonal variation and long-time (secular) trend. Similarly adjusted indexes of the volume of manufacture and mining, and of employment for the years 1910-1923 are shown in Tables D-I-IV, pp. 671-671. The Federal Reserve Board's Indexes of Retail Trade by Federal Reserve Districts discussed in Chapter V appear in Tables C-VI and C-VII, pp. 615-616. These indexes are corrected for seasonal variation but not for secular trend.

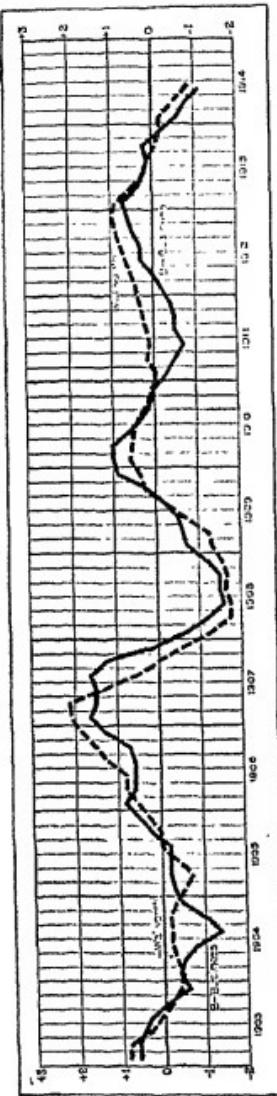


Figure 36: Walworth Manufacturing Company sales compared with the business curve (B), 1923-1934

EXPLANATION: The Walworth curve has been corrected for seasonal variation and secular trend by the methods discussed in Chapter II and explained at length in Chapters XI and XII. Both curves trace changes as measured in "cycle units" or units of standard deviation. The numerical values of curve (B) are given in Table A-II of Chapter XII. The main sweep of the Walworth curve agrees with that of the business curve (B). For the Walworth Manufacturing Company, as for general business, there were three complete swings from depression to prosperity and down into depression again, during the 12 years 1903-1914. Depression years, recovery years, boom years, and crisis years coincide on the two curves. Thus the sales of the Walworth Manufacturing Company responded to cyclical influences of the

three pre-war business cycles in marked degree. It will be found from investigation that the activity of most individual businesses moves in fairly close correspondence with the Harvard business curve. While the movements of a curve for an individual business cannot be expected to coincide at every point with the general picture (curve B), such a degree of correspondence as is illustrated by this chart indicates a relationship which presents a most useful tool of executive control. Most businesses, whether their activity is measured by production, orders, shipments or sales, will find, by investigation, that they are affected by major changes in general business conditions, in much the fashion that the Walworth Manufacturing Company is affected.

did not trouble ourselves to explain why we acted differently in this case from general business. Possibly in the middle of 1904 the company cut prices too low and got in some extra business, but if some exceptional reason like this had been eliminated so that the sales were evenly distributed over 1903, 1904, and 1905, the low point would have accurately tallied with the B curve. The important fact which we observed was that this condition held true after as well as before the war. So again we found greater confidence in the Harvard curve than in other barometers, because no other that came to our attention showed a clear-cut

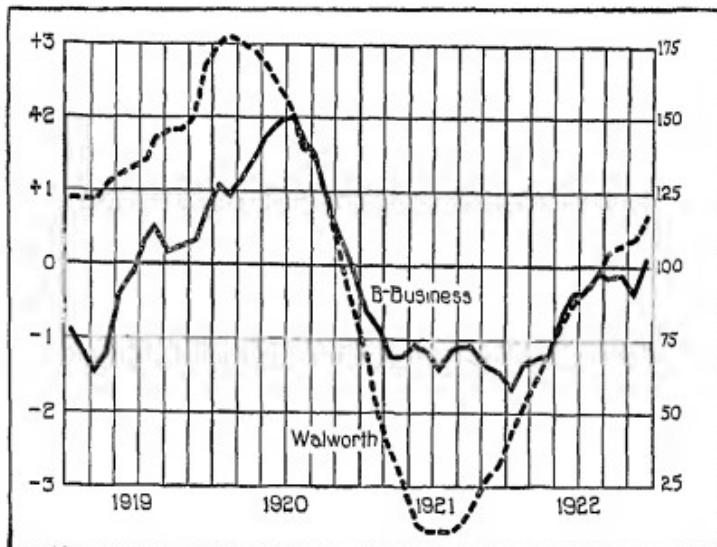


Figure 37: Walworth Manufacturing Company sales compared with the business curve (B), 1919-1922

cycle action in general business resumed in 1919, while the Harvard curve made evident the fact that the normal cycle was resuming its activity in that year. (See Figure 37, above.)

A close study of that chart will bring out one essential difference between the pre-war and post-war curves—particularly in 1921 and 1922. There is now a faster rise in the Walworth than in the Harvard curve. We are beginning to think that this is due to our more effective planning and consequent prompter ship-

ment of our merchandise after receipt of orders. In those earlier days there was hardly a choice but to accept the orders as they were offered and then to arrange to produce the goods as soon as physically possible. Since we are now able to forecast demand we can manufacture to meet known requirements, and have speeded up to a marked degree the shipment of orders as they are received. This means that our index line, which is based on billings, will probably move ahead of the B line instead of with it. Of course time is necessary to determine this to be a fact.

So we discovered that the second suggestion of the economists also found application in our practice. We had not only a business cycle of our own, but our cycle had a definite measurable relation to that of general business. And we were, therefore, in position to use in a very tangible way the forecasts which constantly passed through the planning and statistics section. For instance, very definite predictions are given for a full calendar year in advance as to the action that may be expected for this Harvard B line. And their forecasts in turn are fairly well substantiated, at least as to general probabilities, by the other forecasting services.

C. APPLICATION OF CYCLE THEORY AND DATA TO WALWORTH PLANNING

In the summer of 1921 we had our first opportunity to make use of our discovery. The Harvard B line gave definite assurance that general business was scheduled for an advance. Even when we were not prepared for it, our records showed that we had followed closely the general business trend. What could we accomplish if we prepared for the increase in advance? Industry had just been through a bitter experience that made executives unusually cautious. But we had become firmly convinced by our studies, and such doubt as remained was finally brushed aside by further unquestioned evidence. At about this time the planning and statistics section solicited from the F. W. Dodge Corporation full information on building contracts awarded. It was thought that the statistical barometers of that activity should prove very enlightening to a business such as ours, because of the nature of our product, which is so largely used in building construction. Again our business cycle curve was lined up with the cycle

activity shown by the building figures, and there seemed to be in this case not only a direct relation between our curve and the building curve so far as time of cycle changes was concerned, but also there was a very definite suggestion as to the extent of our business variation. Each year that building was ahead a given percentage over the previous year, our business seemed to go ahead by the same amount in the same year; and each year that building fell off by a certain percentage, our business decreased by the same percentage. We did not infer from this that building was the cause of Walworth demand, but rather that the same cause which determined an advance for Walworth, determined an advance for building. It was a case of the mathematical proposition that things equal to the same thing are equal to each other, so that the forecasts for building were very serviceable as a forecast for Walworth activity. Thus we had selected one outside barometer to indicate the length of time our curve might continue in its present direction before turning, and a second to suggest the degree of its elevation. As an illustration of how valuable such forecasting has been to us, it may be here mentioned that our estimates of sales for 1922 were figured at about 42% increase over 1921. As a matter of fact, building in 1922 advanced 43% over 1921, and our sales were within .5% of the forecast.

It was mentioned earlier that our business went ahead within a calendar year by the same percentage that general building activity advanced in the same calendar year. It is perhaps well to explain that in our business we must consider calendar years only. Our demand is so seasonal that in estimating the amount of business to be expected during any given set of months we cannot ignore the fact of the influence of seasonality within those months. For instance, the drop of January sales from December sales is 35%, averaged over a series of 10 years. This means that in some the drop is as high as 50% and in an exceptional case 60%. This is our seasonal variation at its worst, to be sure. However, from January there is a gradual rise to March with some falling off in April. May and June resume the stride set by March with again a decline in summer. But September tends to reach the March figure with the October figure normally much higher than March. November and December vary somewhat, but the average is for November to be slightly lower than October, and December the best month of the year. It is unusual if the

business cycle increase or decrease from one year to another is greater than 20% or 25%. Therefore, the seasonal influence is

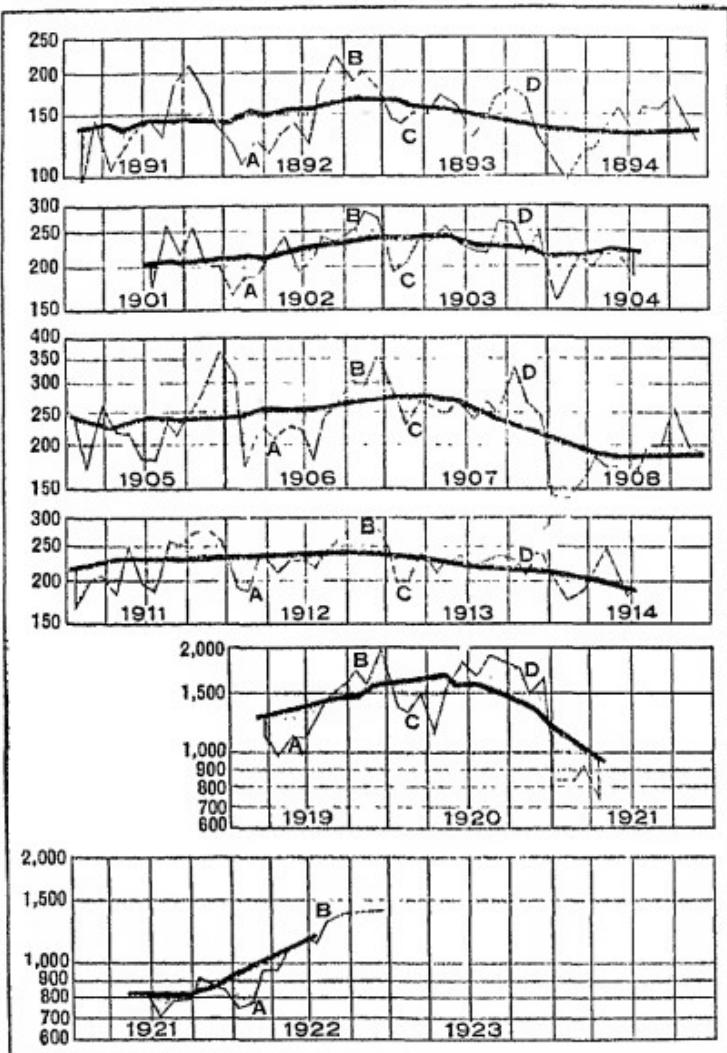


Figure 38: General trends and seasonal tendencies in total Walworth billings in comparable cycle years, 1891-1923

the greater, and to obtain a clear picture of the Walworth cycle we correct the year for seasonal trends and leave the seasonal problem to be taken care of after the cyclical trend has been found.

As a matter of fact, it is not a difficult task to correct for the seasonal variation in order to find the cyclical trend. The third chart, Figure 38, illustrates our method of showing both seasonal and cyclical variations, and is the chart we used to compare similar periods in the past with a view to arriving at our estimates for the year 1923. Two points are brought out clearly in this chart: First, that although the seasonal variation of one year is not exactly like that of another year, yet there is a marked similarity; and second, that in no instance can we find an exact parallel to 1923, for in none of these years did the trend line stay up high so long as we have reason to expect it to do in the present year.

It will be noted that the chart displays a surprising similarity in the last half of the years 1892, 1902, and so on, which were found comparable to 1922, particularly in their seasonal tendencies. In every case a sharp recovery has taken place, the last months being far in excess of the January and February volume. In the same way we find the year following showing a decided downward trend, in one instance the November and December figures showing quite as low as January and February.

For a number of reasons, we were able to draw forward our sales index line with some confidence. The number of months we might expect the line to remain at high levels was very definitely forecast by outside agencies. Again, the amount of increase beyond 1922 was fairly well suggested by reliable figures. Finally there was a good background for plotting our seasonal areas to the trend line as we had extended it through 1923. This background was supplied by plotting out three "assumptions" and then by process of elimination using the most likely one.

The fourth chart, Figure 39, shows these assumptions, any one of which might seem at first to fulfil the conditions. But after super-imposing on the cyclical trend the seasonal variations, it was evident that the second curve, called "Assumption B," was much the most logical. Any volume of sales greater than that amount must be secured by greater efficiency in supplying the market through salesmanship, backed up by unusual cooperation of the works, and by complete utilization of the improved market facili-

ties which have been provided for some of our merchandising units.

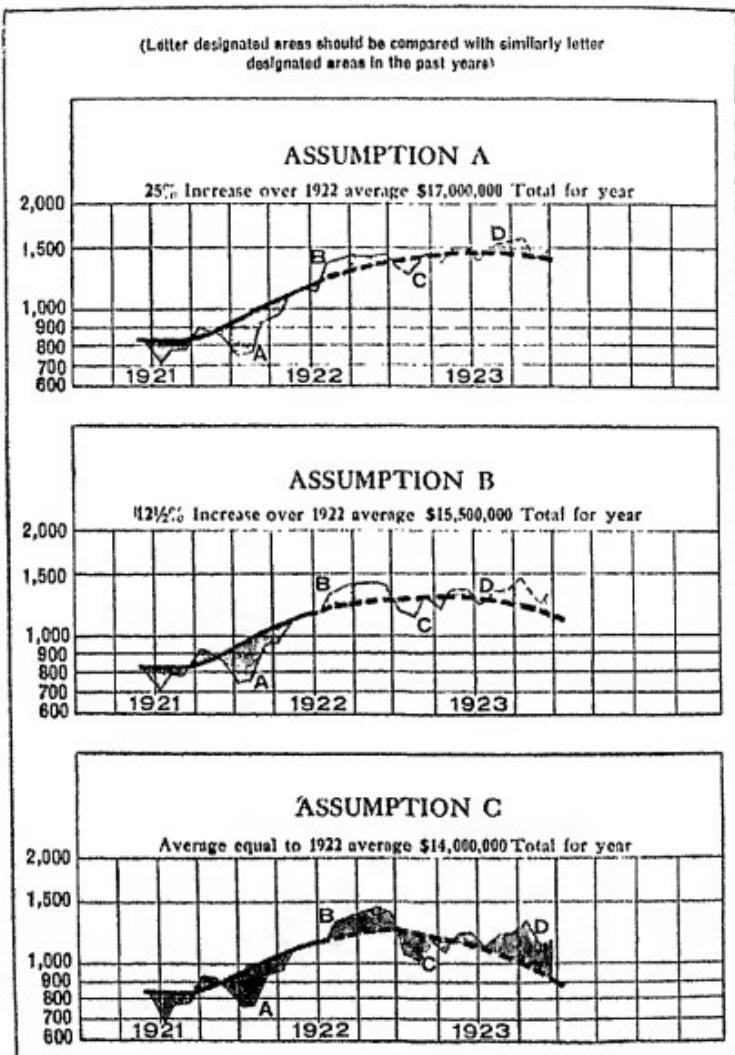


Figure 39: General trends and seasonal tendencies possible and probable in 1923 monthly billings for comparison with comparable cycle years

It was on the basis of Assumption B, therefore, that we laid out our preliminary production program for 1923. Naturally the sales estimate had to be broken down into class production facilities before even the preliminary control instructions could be issued. But having arrived at these class requirements we had a definite basis for setting up material and labor requirements, and for estimating financial demands.

It is not to be thought that this initial program for the year is adopted once and for all without current revision. So far as the production policy is concerned, there is established each quarter an estimate of actual sales requirements upon the two works as it appears at the time of making such a quarterly estimate. This quarterly estimate goes from the sales department through the planning and statistics section to the vice-president in charge of production, who uses it as a basis for formulating his quarterly production and purchasing programs, and for allocating the production between the two works. Nor is this the final step in the control. Each month before the existing production orders are completed or new ones are received, each works manager sends to the planning and statistics section a statement of his proposed production by each of the classes for the coming month. The reports are coordinated and sent for review to the general office executives primarily interested, particularly to the vice-president in charge of production for final review. Although at this time some of the work may be in process, it is yet possible to revise the production downward and to curtail purchases to some extent if desirable, or otherwise to revise the actual policies for the current month.

D. BUDGETARY CONTROL OF SALES, PURCHASES, RECEIPTS, AND EXPENDITURES

In addition to control of production, there are naturally many valuable adjustments that can be accomplished by advance information of the type we have discussed. The most valuable is provided by the monthly budget of sales, purchases, pay-roll, and cash, which is our business thermostat. This budget serves to control the expenses and finished material purchases of the merchandising units which deal considerably in resale items as well as Walworth materials. Further, this budget serves as the trea-

TABLE 7—MAY, 1923, BUDGET WALWORTH MANUFACTURING COMPANY
AND SUBSIDIARY

Item	Billing	Purchases	Pay-Roll	Cash Receipts	Cash Disbursements	Inter-Co. Balances	Inter-Co. Purchases
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
1 General Office Expense.....	\$ 90,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00
2 Eastern Division.....	\$ 600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
3 Boston Works.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
4 Western Division.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
5 Kewanee Works.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
6 Boston Branch.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
7 New York.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
8 Chicago.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
9 Seattle.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
10 Philadelphia.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
11 Portland.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
12 Total Branches.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
13 Wal. Int. Co.....	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
14 Total.....	\$ 9,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00
15 Total Pay-Roll.....	\$ 9,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00
16 Inter-Company.....	\$ 9,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00
17 Total.....	\$ 9,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00
18 Financial Exp.....	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00
19 Total.....	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00
20 Capital and Other Charges.....	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00
21 Total.....	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00

(b) Capital Charges includes \$ 60,000.00 for interest on notes payable
600,000.00 for insurance charges only
600,000.00 for capital fund

(c) None of the figures on the Budget indicate the effect of any proposed note transaction.

surer's advance notice of probable cash requirements several months in advance of the actual requirement date.

On the tenth of the month previous to the one under review, schedules are sent to every unit which makes sales and therefore collects money, or which purchases materials and therefore disburses cash. By the twentieth of that month these schedules are all received back in the office of the planning and statistics section and are combined into a master-budget sheet, letter-paper size. This sheet is designed, as shown in Table 7, page 100, to give a summary picture of the activities of the whole company. First, billings, by units, are set over against purchase invoices to be received and accrued pay-rolls, by the same units. Then there are set against each other cash receipts and cash disbursements, both by similar units. The first set of columns on the accrued basis suggests readily the relation between commitments and sales income. Because of our usual terms of credit these two columns very definitely suggest the probable cash conditions 60 days hence; and the company's total of commitments when compared with sales suggests the current month's profit. The two next columns, or the "cash" columns, suggest probable cash position during the following 30 days. From the treasurer's view-point, these cash columns will indicate the degree to which he may liquidate current borrowings from the banks, or the amount which he must provide to guarantee financing the inventory increase. Of course all this activity could not go on without inter-company exchange of goods, particularly from the works to the branches, so two more columns show, by units, inter-company sales and inter-company purchases.

From this "set-up" there can then be observed for each unit upon a single line across the sheet a summary of its condition as an individual entity. Sales to customers plus inter-company sales represent income. Purchases from outside vendors plus pay-roll plus inter-company purchases represent total commitments made for securing the sales of the month. Or, if there is any change in inventory, after a rough allowance for usual profit on sales, it is readily determined just how much each unit may be changing its inventory condition. Analysis in this form is carried out in Table 8, shown on the following page.

Such a summary for budgetary forecasting and control would not, of course, be possible had not the earlier groundwork been

prepared. The reason it is a simple matter to obtain from each unit head an estimate of his own budget is because he knows very definitely just what his jurisdiction covers, and can obtain from his accounting records, over at least two or three years, the basic data necessary for him to use in estimating the future.

And again we find an opportunity to improve this estimating, because it is possible to prepare, with the expenditure of but a few hours' time every week, a summary of actual figures, which shows us, currently, how closely our performance is meeting the estimate. This weekly summary of the actual status of the company is also prepared on a letter-size sheet of paper. It is set up in exactly the same arrangement as the master estimate for the month so that direct comparison item by item and unit by unit can be made. It is readily discernible on the fifteenth of the month from the weekly master budget report coming out at that time, whether or not, for instance, our Chicago Branch is likely to spend more in the month than it first anticipated. The branch in such a case is supposed to have previously notified us that the estimate was in error. But the weekly reports would develop the situation automatically.

Immediately after the end of the month, approximately 15 days before the final detailed auditor's statements can be made available, the planning and statistics section, from the current accounting sheets as they pass over the desk, abstracts figures for preliminary reports issued to the officers in charge of activities. These reports cover monthly tonnage of orders received, shipments and production, actual purchase commitments, pay-roll, cash receipts and cash disbursements. There are issued a few other preliminary, yet essentially accurate actual reports on activities necessary for current control. When the auditor has made out his detailed reports according to the accounting classification, the planning and statistics section issues comparison letters for the various estimators. This is done so that the estimators may have the lump sum actual totals for the month, in the same form in which they estimate by items for future estimates; and also in order that they may know how far their actual figures vary from the estimate. When some exceptional condition causes the variation between the actual and the estimate, this is explained by the planning and statistics section, but ordinarily the estimator is expected to find the reason for himself.

Perhaps the thing that is most significant in our budgetary system is the simplicity with which it has been possible to operate it. The present work is carried on by three clerks in the general office. The budget is of such a nature that it groups itself into two rush periods during the month, and this makes it possible for the same group of clerks to do the necessary research study when the actual budget work is not pressing. It has not yet been necessary to search for figures that were not readily available from the accounting system as it had been developed with a view to budgetary control. With the records accruing from initial accounting, it has required but little rearrangement and interpretation of the facts at hand to present them in form for application to budgetary needs. Yet this is one of the greatest benefits to be derived from the budgetary procedure.

It is quite generally conceded by those who first had objections to estimating for the master budget that they would not now consider giving it up. One of these executives, who had thought that time given to budget estimating would be wasted, has since said that he now realizes that he never before had a real grip on his job. The requirements upon him to estimate the future have forced him to analyze the present. There can be no question that every executive of our company has a knowledge of his duties that he never had before.

CONCLUSION

Were I unfamiliar with a control system of this type and reading a crude outline of this kind, I am conscious that I should be saying to myself, "All this is very well, but what does it accomplish? This may be a good recipe, but 'the proof of the pudding is in the eating.' What has the budget really accomplished for the Walworth Manufacturing Company?"

Here are the results for the year 1922: Our actual sales came within .5% of our estimate. Cumulatively the first six months were 8% in excess of the estimate; the first nine months were 4.3%, but the full year's figures were so close to the estimate as to be a coincidence. We do not expect again to equal this particular record. We have reason to believe that the earlier months of the year were thrown out of line because of our increased ability to ship promptly. Having advance information, we were

able to decide on a production plan that would give us an even flow of material throughout the year, building up our stocks in the spring and summer months to meet the fall demand. This accomplished not only better service to our customers but greater economy of production, more even employment for our workmen, and a great decrease in labor turnover. It enabled us to anticipate our material requirements and to take advantage of low price conditions. It gave our treasurer exact information as to financial requirements. It made it possible for me to place before our directors a definite estimate of the amount of money that would be involved in producing in advance the excess stock necessary for fall delivery, and it justified them in adopting the program because I could assure them that this investment could be liquidated before the end of the year. It enabled us to set up an ideal inventory for the end of the year to work toward final liquidation to this ideal point. It proved that this inventory control was practicable because we came within the limit set by my office.

Of all these benefits, probably the greatest has been our ability to operate on an even basis throughout the year. Under the old conditions we could have produced 16% of our total requirements in the first quarter; 22% in the second quarter; 28% in the third quarter; and 34% in the fourth quarter. In 1922 it was possible to equalize approximately the quarterly production figures. In these days when seasonal employment is one of the country's greatest problems, when labor turnover is great and when an actual shortage of labor has occurred, continuous employment at fair wages is the stimulus to the good workman that no temporary attraction can equal. Carried over a period of years it will secure the type of labor that makes for economy and efficiency. This does not mean of course that we can counteract the cyclical fluctuations. The fact that we are able to take care of this problem within each calendar year is a substantial step in the right direction.

Budgetary control is now one of the fundamental policies of the Walworth Company. It is our record of the past, our index for the present, and our guide to the future. We believe it to be an essential factor in our success.¹

¹See also "How the Walworth Company Looks Ahead," by J. H. Barber, *Administration*, vol. 5, pp. 523, 659; *Management and Administration*, vol. 6, pp. 29, 191, 313, 453, 581, 725.

PROBLEMS IN BUSINESS ECONOMICS

PART II

PROBLEMS

VIII

FINANCIAL PROBLEMS

A. SOME CONSEQUENCES OF THE CRISIS OF 1920

I. BALBOA FISHERIES—REORGANIZATION FOLLOWING MANAGEMENT BY CREDITORS' REPRESENTATIVE¹

The Balboa Fisheries, located in Neptune, a city with a population of 25,000 on the coast of New England, was formed in 1906 by a consolidation of six companies. The company's sales increased gradually until 1917, and then rapidly in 1918 and 1919 to meet war conditions. When prices declined in 1920, the Balboa Fisheries was unable to meet maturing obligations. A receivership followed, and when a plan of reorganization was proposed in 1923, the stockholders had to decide whether or not to pay the assessments specified.

GENERAL STRUCTURE

The four largest companies, which had been keen competitors before 1906, were located in Neptune. The other two companies were farther north. At the time of consolidation, the officers of each were confident that economies of operation and an increase in total sales could be secured. Two of the companies did not own ships, but possessed superior plants, while two others had fleets of vessels, and one of them an established shipping trade. The consolidation used slightly more than 50% of the fish brought to Neptune. The officers of the consolidation, who came from the component companies, were thoroughly familiar with the fish industry, since they had been engaged in it for periods varying from 10 to 25 years.

The operations of the company were divided into two principal parts, namely, fishing, and the packing and sale of dried and cured fish. In 1918, the fishing was carried on by a fleet

¹See "Creditors' Committee Receiverships," by Arthur S. Dewing, *Harvard Business Review*, vol. I, p. 31. Professor Dewing presents the view-point of the banker-creditor rather than that of the stockholder of an embarrassed concern.

of 88 vessels, of which 61 were owned by a subsidiary of the Balboa Fisheries, the Balboa Vessels Company, and 27 were owned jointly by the company and the individual captains. The policy of joint ownership had been followed in order to encourage thrift on the part of the captains, and in order to maintain a close relation between the company and men thoroughly acquainted with fishing. Many of the vessels had been built for captains who invested their savings in them; the ownership ordinarily was divided into shares, of which the captain owned a number and the Balboa Vessels Company the rest. In 1918, the vessels were valued on the books of the Balboa Vessels Company at \$670,000. This valuation was conservative, as evidenced by the fact that an appraisal company then valued them at \$1,200,000 after depreciation. There was a steady demand, furthermore, for fishing vessels, since construction of ships of this type had been curtailed during the war. All the stock of the Balboa Vessels Company was owned by the Balboa Fisheries.

Approximately 1,000 men were engaged on the vessels in which the Balboa Fisheries was interested. The captain of each ship decided the time to sail, and each voyage was undertaken on a profit-sharing basis under an agreement called a "lay." While at sea, the captain could decide where to fish and where to convey his product. In practice, however, each captain kept in communication with the president of the company, who advised him of conditions and of prices at various ports. The captain of each ship entering a port after a catch ordinarily sold a portion of the cargo in the fresh fish markets where a higher price could be obtained for a limited quantity than the Balboa Fisheries was willing to pay for its raw material. When one of its vessels returned, however, the Balboa Fisheries held itself in readiness to purchase the entire cargo at the prevailing price for fish for salting. When a voyage was completed, the profits were divided among the captain, crew, and the Balboa Vessels Company according to the "lay" agreed upon when the voyage was undertaken. In addition, the Balboa Fisheries purchased about 50% of its raw materials from vessels in which it had no interest. Since the companies in Neptune were accustomed to pay the same price for their fish, the good-will which any one company had among fishermen was important in the determination of how much raw material was offered to it. The officers of the Balboa Fisheries held the esteem

of the fishermen and were able to secure an adequate supply of fish.

When an underwriting was considered in 1918, the president of the Balboa Fisheries outlined the condition of fishing labor. He stated that every fisherman was a working partner rather than an employee of the company. The profits of every voyage were distributed on "shares"; hence the supply of fishing labor depended on the demand for fish. When prices were low, the fishermen left the sea for occupations on shore. This caused a reduction in fishing activity, and a diminution in the supply of fish. Increased prices followed, and the pursuit soon became more remunerative. The fish industry, therefore, had a distinct advantage over those in which capital employed labor, inasmuch as the supply of labor fluctuated directly with the activity of the industry rather than inversely to it. In support of a statement that the Balboa Fisheries had satisfactory relations with its employees, he cited the fact that 60% of them had been employed for at least 10 years.

The second principal function of the Balboa Fisheries was to clean, salt, cure, skin, bone, smoke, and can the fish. Five plants were maintained at Neptune and two at other seacoast towns. At Neptune, likewise, plants were maintained for the manufacture of nets and seines, the manufacture of sails, and the repair of fishing equipment. About 600 employees normally were required, to conduct all the shore activities.

DISTRIBUTION

In addition to fresh fish, of which the vessels in which the company was interested supplied about 20% of the New England demand, the products of the Balboa Fisheries included canned and boxed codfish, canned fish and potato, chowder, flaked fish, fish balls, and cod liver oil. The name "Balboa" was advertised extensively in the United States. Distribution was secured through branches in New York, Chicago, and Boston for neighboring territories and through the efforts of brokers' salesmen in the rest of the United States. The brokers received commissions on orders sent direct to the company as well as on those which they themselves transmitted. In addition to its own brands, the company produced private brands to the extent of about 40% of

its total output. These were distributed among 150 wholesalers and fancy grocers, at prices approximately 5% below those obtained for its own brand, although the cost to the company to pack private brands was from 3% to 4% higher. The company retained its private brands in order to maintain its total volume of sales, but it was endeavoring gradually to increase the proportion of fish sold under the Balboa trade-mark.

Fish was sold in South America, the West Indies, Greece, and Italy. For this export trade, dried fish chiefly was in demand. Because of the habits of the people in these countries, the fish had to be prepared differently for each. The prices secured were lower than those received for the highest quality of product for domestic consumption. Sales were made through firms of exporters in New York and Boston on 30- to 60-day contracts.

The sales of the company during the first 10 years of operation, from 1906 to 1916, averaged \$1,850,000. In none of these years did they exceed 119% of this average, nor did they fall below 86%. The profits averaged \$79,000 per year. The margin of gross profit remained relatively constant and the cost of the raw material varied little from 64% of the selling price of the products. In 1918, the distribution of sales was as follows:

New England	24%
Middle Atlantic States	20%
Middle Western States	12%
Northwestern States	10%
Southern States	8%
Pacific Coast	6%
Foreign	20%
Total	100%

Shortly before 1918, the company had decided not to continue shipments to retailers except to a few fancy grocers who were purchasing private brands. The officers held the opinion that since the profits of the company were dependent chiefly on the quantity of output, distribution through wholesalers was the most effective way to market the fish. Since the products were semi-perishable, furthermore, if wholesalers carried stocks from which shipments could be secured at short notice, the company avoided the dissatisfaction sometimes incurred when retailers were encouraged by quantity discounts to purchase larger quantities than they could dispose of conveniently in a period of a few

weeks. In previous years, the company had entered into contracts with distributorers for the delivery over several months of fish products. In 1918, however, the directors decided that contracts were not an advantage to the company except to make possible a schedule of production conforming better to demand. Frequently orders were canceled when prices declined, and when prices were rising the company was deprived of profits. Consequently, contracts of no more than 60 days' duration were made after this time.

Exclusive agencies were not granted by the Balboa Fisheries and the company did not insist that retailers carry its products to the exclusion of those of its competitors. It was considered that the most effective sales could be secured under open competition. Because of the prospects of fluctuation in freight rates, the company inaugurated the policy in March, 1918, of billing its products f.o.b. Neptune, instead of paying freight to destination. This procedure was expected to avoid difficulties of price adjustment.

EXPANSION

On January 1, 1917, the Balboa Fisheries purchased the Sweetser Fisheries located in the city of Neptune. To finance this purchase, \$500,000 of 7% preferred stock was issued.¹ Garland and Company, a firm of investment bankers, which underwrote the issue, was paid chiefly in common stock, a portion of which was distributed among the members of the selling syndicate. Sales increased proportionately to the increased investment during the next two years and were enhanced by the increased demand for fish which resulted from war conditions; in 1917, gross sales were \$3,513,000, and in 1918, \$6,564,000. The profits for these years were \$240,000 and \$615,000, respectively. The actual increase in output was somewhat smaller than the figures indicated because of the increase in prices. The expansion in physical volume of sales, however, was about 37%.

In order to finance this increased volume of sales and the increased inventory, it was necessary to borrow extensively.² For

¹The stock was redeemable at 110 and accrued dividends; \$25,000 was to be placed in a sinking fund each year as was an amount equal to the amount by which common dividends exceeded 5%.

²Inventory on March 31, 1916, was \$333,000; on March 31, 1917, it was \$856,000; and on March 31, 1918, \$1,324,000.

this purpose bank lines were utilized and paper was sold on the open market. From 1916, to 1918, notes payable increased from \$266,000 to over \$1,100,000. In order to supply the increased demand for fish, the company constructed an additional plant, and, chiefly on account of the foreign demand, established 50 receiving stations along the coast of Maine and Canada. At many of them, storage sheds were maintained from which fish could be shipped to Neptune by railroad or by vessel in the slack fishing season. The investment in each station varied from \$1,000 to \$10,000.

The officers were convinced that the increase in fish sales was to continue. They expected that, stimulated by its use during the war, the people would become more accustomed to fish as a food. The average consumption of fish in the United States was only 13 pounds per person per year, whereas in England, the average was 57 pounds and in Japan, 70 pounds. The officers estimated, furthermore, that canned fish could be produced at a profit under any conditions, since the cost of raw material bore the same relation to sales under conditions in 1918 as in the preceding 10-year period.

In order to fill the increased volume of orders, the question of increased capital was considered, and in August, 1918, it was determined to retire the \$500,000 of 7% preferred stock then outstanding and to issue \$1,400,000 of 8% preferred stock¹. Garland and Company undertook to dispose of this stock in return for common stock in payment of its services. At the time the issue was put on the market, the bankers offered to exchange 11 shares of new preferred stock for 10 of the old, which was equivalent to the redemption of the old preferred at 110, as provided by the agreement. Since the new issue was marketed at 103, the old stockholders who took advantage of this offer were given a 3 point advantage over the new subscribers. In order to increase the amount of common stock at this time from \$1,676,000 to \$2,218,000 and to increase the surplus, the good-will account was increased.

The increased capital invested in the company enlarged the supply of bank credit of the Balboa Fisheries and enabled it to

¹The agreement covering the new issue provided that no mortgage could be placed on the property without the consent of two-thirds of the preferred stock outstanding. The whole issue or any part of it was redeemable at 110. A sinking fund of \$70,000 annually was to be set up.

carry the increased inventory and accounts receivable necessary with the increased sales. It permitted the company, furthermore, to invest several thousand dollars in vessels and additional plant and equipment. Early in 1919, the bankers became aware of the inventory of over \$2,000,000 and suggested to the Balboa Fisheries that an effort be made to liquidate. Over one-half the total, however, was in the form of dried fish suitable only for export.

The demand for fish for export declined suddenly in 1919, and the officers deemed it advisable to hold the finished product in expectation of higher prices later in the year. In July and August, 1919, a strike occurred among the fishermen which cost the Balboa Fisheries from \$100,000 to \$200,000. Since it occurred at the time of year when mackerel was easiest to catch, the Balboa Fisheries was deprived of a substantial profit. In the meantime, the price of fish had been declining steadily, and in December, when an effort was made to dispose of the inventory, the railway car shortage which occurred at that time and the ice which blocked the Neptune harbor prevented prompt shipments. Sales for the year ending March 31, 1920, were \$5,475,000 as compared with \$6,573,000 in 1919, and instead of a profit of \$420,000, a loss of \$59,000 was incurred. At the same time, inventories were reduced only \$412,000, whereas, if the fish could have been sold as easily as previously, the amount of finished product would have been reduced by more than \$750,000.

When the bankers were confronted with this situation, they observed the finances closely throughout the next three months. They insisted that both common and preferred dividends be passed in June, 1920, and threatened to put the company into receivership unless their representatives were placed in charge and allowed to manage the company until the bank loans of over \$2,000,000 were liquidated. In an endeavor to avoid the publicity caused by such a step, the directors assented to a president selected by the creditors.

LIQUIDATION

The liquidation of the inventories as rapidly as possible, and the reduction of the manufacturing overhead were the outstand-

ing necessities at that time. When the president came into office, inventories amounted to over \$2,500,000. Foreign demand for fish had temporarily disappeared, and domestic sales were low because of the stocks held by the distributors. In order to sell the fish, however, the president determined to grant 5% instead of the 2½% commissions which had been in effect with brokers. It was also decided to build up an extensive selling organization to dispose of the material at whatever sacrifice was necessary.

Prices through 1920 and 1921 for large export cod per 448-pound drum were as follows:

January, 1920.....	\$48
October, 1920.....	45
December, 1920.....	38
February, 1921.....	26
April, 1921.....	28
June, 1921.....	38
October, 1921.....	34
November, 1921.....	32

By December, 1921, the inventory account had been reduced to \$615,000, of which \$420,000 represented fish. The president stated that he deemed this to be the smallest possible amount which could be carried without endangering the ability of the company to fill orders expeditiously. On the original amount a loss of \$1,000,000 had been taken because of price declines.

In order to reduce the overhead, the president had closed all but two of the plants owned by the Balboa Fisheries, and was endeavoring to sell the idle ones. Since the only possible purchasers for fish plants were competitors of the Balboa Fisheries, and since the competitors were all in substantially the same financial position, the buildings were difficult to sell. Losses in vessels and vessel supplies to the sum of \$175,000 over the amount in reserve for this purpose had been incurred in the liquidation of assets. Thirty of the northern stations had been sold with a loss of \$92,000. Holdings of Liberty bonds had been disposed of at a loss of \$29,000. Receivables had been written off to the amount of \$111,000.

In order to reduce the fixed charges and operating expenses of the Balboa Fisheries, the president determined to discontinue the private brands except when orders were secured in 25-case lots. This ruling was designed to permit production on a larger

scale and to allow manufacturing economies which were deemed necessary. The president stated that price must be an attraction in the sale of fish and that a high price would decrease the sales volume. Reorganized operating methods were adopted. The president believed that it was advisable for the company to know its process costs, which it had never determined accurately. Consequently, a system was adopted whereby raw material was valued in the inventory at average cost. Cost of sales was computed on schedule costs and inventory adjustments were made when necessary. A stock control system was established which permitted a reduction in inventory of \$100,000. Obsolete materials were sold for \$62,000. The president established an employment department to regulate the transfer of men from one department to another in order to reduce labor costs. A bonus system of payment was put into effect for a portion of the employees. With no increase in personnel a planning department was established to assure a more even rate of production; a machinist department was added to make repairs on vessels at low costs, and a trucking division was organized to facilitate deliveries.

During the first year of the bankers' operations, sales amounted to \$3,628,000; during the second, \$2,033,000. The president attributed this tremendous decline to general business conditions; to stocks outstanding in the hands of wholesalers and retailers; to a general preference among the people of the United States for meat when the use of fish was not regarded as a patriotic duty; to the company's lack of credit for the purchase of a few of the more expensive grades of fish; to an unusually small mackerel catch for two years, which netted losses instead of profits; to the continued high prices for cans, which prevented any substantial reduction in the price of canned fish products, and to the lag in reducing the expanded organization. It had been necessary to retain unproductive employees while the liquidation was progressing. In the judgment of the president, his reorganized operating methods had effected a saving of \$159,000 per year, and if sales for the following year amounted to \$2,000,000, he expected a trading profit of 25% upon all sales above that amount. It was recognized that sales of this volume were not certain, but the president was hopeful that results would be profitable.

NEGOTIATIONS FOR REORGANIZATION

Soon after its formation in June, 1920, the creditors' committee entered into negotiations with Garland and Company for a reorganization. The firm considered itself responsible to the preferred stockholders to whom the stock had been sold and in February, 1921, on the basis of the estimated balance sheet of the Balboa Fisheries as of the end of the fiscal year, April 1, offered to underwrite a \$350,000 first mortgage bond issue on the Balboa Vessels Company. The creditor banks promised to lend money to Garland and Company on these securities as collateral until they should be sold to the public. When the figures were compiled on April 1, however, the liabilities to noteholders were \$1,453,000 instead of the \$800,000 expected and the statement was so far inferior to that predicted by the president that Garland and Company refused to carry through the underwriting.

The preferred stockholders did not hold that the creditors and their representatives were in a position to manage the company in the interest of the owners of the equity. The salaries of the employees in both manufacturing and selling divisions, as well as the commissions of brokers, had been increased. The president stated that this was for the purpose of disposing of inventories as rapidly as possible. Repairs which the captains had been accustomed to do without charge had been made on vessels by the repair department. In the opinion of stockholders, private brand sales in 25-case lots only were not conducive to permanent good-will. The manner in which export shipments were made, furthermore, had resulted in ill will among consignees. In at least one instance, two importers in Cuba had received simultaneously shipments which were too large to dispose of conveniently, so that price cutting followed. In order to safeguard their interests, the preferred stockholders on February 25, 1922, formed a protective committee of interested stockholders and through it endeavored to perfect a plan under which the creditors would be willing to resign the control.

On March 23, 1922, the preferred stockholders' committee offered to pay the creditors all the unessential cash then in the treasury, and one-half the sums obtained from the liquidation of assets as soon as received if the creditors assented to a man-

agement selected by the preferred stockholders and agreed not to petition for a receivership for a period of one year.

On March 28, 1922, the creditors' committee declined this offer, with the statement that the bankers were not ready to accept the additional risk which was incurred by this extension of time, unless they were assured that further capital was forthcoming. If such assurance were made, a change in management would be acceptable.

On March 29, 1922, the president published a plan which he submitted to the common and preferred stockholders. It provided for the issue of \$1,000,000 of first mortgage bonds to be accepted by the noteholders at par. The company was to pay the creditors \$431,000 in cash and the stockholders were to subscribe to \$175,000 of 8% preferred stock at par; 17,500 shares of no-par common stock were to be given to the subscribers, 10 shares for each share of preferred. Under this reorganization plan, the old common and preferred stock was valueless except that three option warrants per share of the preferred stock were given to each preferred stockholder, which entitled him to the purchase within two years of three shares of common stock at \$10 per share. The proceeds of these subscriptions were to retire the first mortgage bonds at par. The common stockholders were to have the privilege of subscribing, subject to allotment, to new preferred stock with a bonus of 10 shares of common stock for each share of preferred. Since it was feared by the preferred stockholders' committee that this plan might result in the permanent transfer of control to the temporary management, it refused to recommend this plan of reorganization, unless modifications were made. It insisted that the old stockholders who did not subscribe to new stock be given some common stock, that the old common stock be given more favorable terms, and that a change in management be assented to by the creditors.

On April 24, the banks rejected the proposed modifications and suggested that mortgage bonds be given them for \$500,000, together with liens on the movable assets of the company for the balance of their claims. The preferred stockholders declined this offer, and stated they would not oppose a receivership, provided two men were appointed of whom one should be designated by the preferred stockholders' protective committee. The

creditors' committee objected to the arrangement but finally consented when the stockholders suggested that they would oppose the action in court on the ground that many of the losses had been incurred during the administration of the creditors' management. On May 27, 1922, two receivers were appointed. If these two men did not agree on any action, recourse was to be taken to the court which appointed them, for a decision. In making the appointments, the judge stated that he considered a receivership to be far more equitable for the stockholders than the existing management.

Meanwhile, the financial statement for the fiscal year ending March 31, 1922, had been published. Sales had amounted to \$2,033,000 and the total loss for the year, \$468,000. Immediately after April 1, a payment of \$500,000 was made to the creditors so that over half the original indebtedness had been liquidated. The amount had been reduced to \$984,000 from a high mark of \$2,018,000 on June 30, 1920. The notes were held by many banks and by some industrial companies and by six reserve city banks, each of which originally had owned from \$50,000 to \$200,000 of paper. One of the fish plants already had been sold, as had 22 of the vessels, so that the company obtained only about 20% of its fish from its own ships.

On August 7, 1922, the preferred stockholders presented another plan. The banks were to replace in the company \$116,000 of the \$500,000 which had been paid them immediately prior to the appointment of the receivers, in order to leave a total bank indebtedness of \$1,100,000. A new company was to be formed to purchase the assets of the old, and in exchange for their notes, the creditors were to accept \$1,100,000 first mortgage bonds of a total issue of \$1,275,000. With the remaining \$175,000 of bonds and with 17,500 shares of a total issue of 35,000 shares of no-par-value stock of the new company, cash was to be secured from the public. Fourteen thousand shares of stock were to be exchanged share for share with the \$1,400,000 of preferred stock then outstanding. The remaining 3,500 shares were to be reserved for general corporate purposes. It was provided in the mortgage indenture that no dividends should be paid on the common stock until the quick assets of the company should equal 175% of the entire indebtedness. Any payments on indebtedness were to be made on that portion of the notes held by the

creditors. If any default in payments was made or if after two years there was no improvement in the condition of the company, the creditors were to have the privilege of requesting a sale of the assets and of reinstalling their own management.

On September 6, the creditors refused the above plan but agreed to accept \$500,000 of bonds, \$200,000 of short term notes, and \$284,000 in cash.

On September 15, the preferred stockholders' committee stated its opinion that no individual could be expected to provide cash to purchase bonds at par when the return to him was to be no larger than that to be obtained by the existing unsecured creditors. The investment in such bonds amounted to the voluntary assumption of the status of a noteholder with a position admittedly inferior to that of a possessor of cash. If, however, a possibility of greater returns were permitted, money might be secured. It offered the creditors \$500,000 of bonds and \$484,000 of preferred stock, if it were permitted to purchase the assets of the corporation.

The creditors' committee, however, held the opinion that any further extension of credit by its depositors was prejudicial to their interests unless further capital was invested in the company. Hence, on December 1, 1922, it petitioned the court for a sale of the assets of the company. The preferred stockholders showed that there had been a profit of \$28,000 since the appointment of the receivers, that slow assets had been liquidated to the amount of \$175,000, that expenses had been curtailed by the receivers, and that the company was in a better financial condition than it had been for three years. They alleged, consequently, that it was unfair to the preferred stockholders to be forced to part with so large a portion of their equity at a time when there was every possibility that additional money could be secured on the basis of current earnings. The creditors, on the other hand, saw no reason for delay if they could secure their claims and insisted on placing the question before the court. The judge ruled, however, that the receivership should continue until a clearer estimate of the future of the company could be made, but indicated that he was not inclined to continue the receivership much beyond one year.

Operation Under Receivership. With their appointment, the

receivers had reduced prices of finished products nearly 20% in an endeavor to increase sales. The results were not in accordance with expectations, however, for the sales of the first four-week periods were only 72% of the same period in 1921. This small volume was attributed to the unfavorable market for food products, to the unfortunate publicity given the company by the receivership, and to the fact that the company seldom showed a profit on its summer operations, because, during that time, the supply of fresh fish was abundant and as a result sales were relatively small. During the same 16-week period, the operating loss was \$13,000 as compared with \$141,000 for the corresponding period in 1921. Even in this short time, there had been an improvement in the morale of the employees, who were more in sympathy with the actions of their former officers than with the rulings of the creditors' representative. Former customers, furthermore, no longer hesitated to purchase from the Balboa Fisheries because of an apprehension that the company might be liquidated at any time.

Decreases were made in the salaries of the office and operating staffs soon after the receivers' appointment. To effect savings employees were dismissed without harmful effect on the organization. The accounting staff, for example, was reduced extensively. Expenses were cut \$7,000 per four-week period, of which \$6,000 was a permanent reduction.

In December, 1922, the receivers paid 10% on the outstanding claims of \$984,000, reducing them to \$886,000. In order to reveal the most conservative financial condition of the company, interest was accrued at 6%, a total of \$66,000. Miscellaneous debts of \$25,000 brought the total indebtedness to \$997,000.

During the year ending March 31, 1923, the Balboa Fisheries showed total sales of \$2,040,000 and losses of \$5,000, after accruing interest of \$66,000 on the debt and a depreciation of \$62,000 on a plant valuation of \$1,454,000 as shown on the books. If the depreciation was computed on \$560,000, the amount which was reported to the court, an operating profit of \$33,000 was apparent.

1923 Reorganization Plan. Encouraged by this profit, one of the preferred stockholders in May, 1923, undertook to present a plan of reorganization. He proposed to form a corporation to

negotiate for the purchase of the assets of the Balboa Fisheries. He had not ascertained on what terms the creditors would accept a settlement of their claims, but he estimated that if \$330,000 could be raised from the stockholders the equity could be obtained.

Since the company appeared to be again on an earning basis, the creditors were indisposed to accept less than the face amount of their claims with interest. It was pointed out to them, however, that they could not expect to realize 100% of their claims. Much of the good-will of the Balboa Fisheries was owed to the officers of the company, and these could not be induced to continue with the company, if the creditors purchased the property at a receivers' sale. The officers were in position, furthermore, to establish a rival company, and to secure for it much of the good-will of the existing corporation. The assets of the company were difficult to liquidate, and the banks might be compelled to wait several years for their money. Because of these considerations the creditors assented to the following plan.

First-mortgage 10-year 6% bonds to the amount of \$440,000 were to be given to the noteholders for about 50% of their claims. These bonds were to be secured by a lien on the real estate of the new company and on the property of the Balboa Vessels Company. Against the bonds a sinking fund of \$25,000 per year or 15% of net earnings, whichever was larger, was to be set up, beginning after two years. They were callable at par and accrued interest. The company was to settle the other 50% of the creditors' claims with cash from the treasury. At least \$115,000 was to be obtained from stockholders for working capital under the following plan. Fourteen thousand shares of new preferred stock of \$25 par value and 18,000 shares of no-par-value common stock was authorized. Each holder of preferred stock of the old corporation was entitled to subscribe at par for one share of new preferred stock for each share he then held. As a bonus, he was to receive one share of new common stock. Each holder of old common stock was entitled to subscribe at \$10 for one share of new common stock for each 10 shares which he held. Each preferred stockholder who did not desire to subscribe could surrender his certificate in the old corporation and receive one share of new common stock for each five shares of old preferred. Each common stockholder who did not desire to subscribe could surrender

his certificate in the old corporation and receive one share of new common stock for each 50 shares which he held. The new preferred stock was to bear cumulative dividends at the rate of 7% and was to be callable at \$27.50. Each share of preferred was entitled to one vote in the new corporation; the common stock was not entitled to vote except on the question of the retirement of the preferred stock.

In endorsing the plan of reorganization, the preferred stockholders' protective committee stated that it believed the proposed plan to be the best obtainable. The creditors had been persuaded to accept 50% in bonds and 50% in cash for the face amount of their claims without interest. Since the equity in the company was to be given chiefly to the old preferred stockholders, the 25% assessment was not deemed excessive. At the same time, the 2% assessment of the common stockholders was considered adequate to yield \$20,000 to \$25,000 without being too high to exclude the holders of common stock from participation. Since the company, under the receivership, had shown earnings after interest and depreciation charges had been deducted, the committee was confident that additional investments by the stockholders were justified because of the prospects of future earnings.

Was it to the interest of the preferred stockholders to subscribe under the plan?

Was it to the interest of the common stockholders to subscribe under the plan?

2. BATEMAN STOVE COMPANY—SECURING ADDITIONAL WORKING CAPITAL FROM STOCKHOLDERS

The Bateman Stove Company was unable to repay bank loans in January, 1923, because more than one-half its current assets were in the form of materials and unfinished stoves which could not be converted into cash for at least six months. The bank loans of \$47,585.66 were held by two local banks and a third bank in a nearby city. The management of the company was controlled by the inventor-promoter, although he held but one-fifth the capital stock. The remainder was owned by local investors in amounts from a few shares to 100. The cashier of the Hendrickson National Bank, one of the local holders of the Bateman Stove Com-

pany's notes, suggested to two stockholders that they advance \$50,000 to the company, and that the remainder of the stockholders advance an equal amount. To protect the two stockholders and also to assure a change in management, the cashier proposed that proxies in favor of the two men and a representative of the banks be secured from a majority of the stockholders.

The company had been organized in November, 1919, through an appeal of the Chamber of Commerce to the local pride of the town of 7,000 people. The stock was sold in one morning. One-fifth of the common stock, or \$25,000 par, was given to the promoter for various patents on the stove burner, and he was appointed general manager in charge of all departments. He had had no experience other than his trade of mechanic. The board of directors was composed of the owner of the department store, a newspaper editor, a miller, a lawyer, and the general manager.

Shortly after the company began production, in the summer of 1920, it was sued by another stove manufacturer, who alleged infringement of patents. The suit was pending in the courts for more than a year, during which time several distributors refused to sell the Bateman stoves because of their liability in case the suit was decided against the company. The stove was a departure in American manufacturing. It was claimed that it consumed but one-third the gas and yet produced three times the heat of ordinary gas stoves. All the gases were burned completely, and no noxious fumes were emitted. The stove had been made in Great Britain for many years, but it had been introduced into the United States only a few years before the Bateman Stove Company was organized. Legal expenses of approximately \$10,000 were incurred by the company during the suit, which finally was decided in its favor because of the provision in the patent laws which refused basic patents to a product already manufactured in a foreign country.

After the court decision, the company had no trouble in disposing of all the stoves it could produce, but output was restricted by insufficient working capital. The salesmen were sent out in June and were recalled in less than six weeks. During the remainder of the year they were given a drawing account, but their services were used only for publicity purposes at conventions.

During 1921 and 1922 the general manager experimented with a new burner for hot-water tanks, which tied up \$50,000 capital, while the only asset to offset the cost was 500 burners inventoried at \$125 each.

Production of stoves started on August 1 of each year and continued until January 1. Only a skeleton organization of the skilled workers and the office force was retained in the other months. Deliveries started September 1. Production was continued at capacity during 1922 until January 1, 1923, when the factory was closed with approximately \$100,000 in unfinished product or raw materials. The general manager applied to the banks for an extension of the company's notes when it was evident that the cash was not available to meet all the current liabilities.

The company presented a balance sheet and operating statement (reproduced below and on the opposite page) which had been prepared by an auditing and appraisal company.

BATEMAN STOVE COMPANY—BALANCE SHEET AS OF DECEMBER 31, 1922

ASSETS			
Current			
Cash	\$ 4,250.53		
Accounts Receivable.....	\$101,583.03		
Notes Receivable	347.10		
Trade Acceptances Receivable... .	<u>9,351.86</u>		
	<u>\$111,281.99</u>		
Less			
Reserve for Losses....\$ 6,055.05			
A. R. Discounted.... <u>11,936.71</u>	<u>17,991.76</u>	93,290.23	
Inventories at Cost.....		<u>98,120.20</u>	
Total Current Assets.....			<u>\$195,660.96</u>
Property Accounts			
Land and Buildings.....\$ 80,922.72			
Machinery and Equip.\$88,457.84			
Less: Depreciation... <u>9,348.21</u>	<u>79,109.63</u>		
Total Property Accounts.....			<u>160,032.35</u>
Formulae Development, Designs, Patents, Good-Will, and Man- agement			75,000.00
Deferred Charges to Operations..			<u>449.88</u>
Total Assets			<u>\$431,143.19</u>

LIABILITIES

Current	
Notes Payable to Banks.....	\$ 47,595.66
Trade Acceptances Payable.....	32,848.98
Accounts Payable	<u>35,971.84</u> \$116,416.48
Contingent	
Due on Purchase of Land and Buildings	40,000.00
Accruals and Reserves	
Commissions	\$ 26,455.65
Less: Salesmen's Advances.....	<u>10,748.88</u> \$ 15,706.77
Taxes, Unclaimed Wages, etc....	<u>2,829.05</u> 18,535.82
Total Liabilities	\$174,952.30
Capital Stock (Common).....	\$126,700.00
Surplus	
Earned through Operation.....	\$ 30,526.86
Earned through Appraisal.....	<u>98,964.03</u>
Total Surplus	<u>129,490.89</u>
Total Capital Worth.....	<u>256,190.89</u>
Total Liabilities and Capital.....	\$431,143.19

BATEMAN STOVE COMPANY—OPERATING STATEMENT FOR 1922

Net Sales	\$337,001.53
Materials	\$113,715.67
Direct Labor	67,000.00
Miscellaneous Expenses	<u>42,293.85</u> \$223,009.52
Less: Increase in Inventory.....	<u>16,864.37</u> 206,145.15
	\$130,856.38
Selling Expense	
Advertising	\$ 11,015.69
Commissions	40,377.22
Sales Expense	<u>3,873.24</u> 55,266.15
Selling Profit	\$ 75,590.23
Administration Expense	
Salaries	\$ 14,520.03
Interest Paid	6,708.63
Discounts	3,044.43
Bad Accounts	3,448.97
Corporation Taxes	1,519.00
Miscellaneous	<u>7,626.33</u> 36,867.39
Net Profit from Sales.....	\$ 38,722.84
Miscellaneous Income	251.68
Net Income	\$ 38,974.52

The land and buildings accounts were based upon the appraisal value of the auditors, with the assumption that the company was to acquire the property. The contingent liability was the estimated cost of the properties. Accounts receivable were all due within 90 days, as were trade acceptances receivable. Current liabilities matured within the same period. It was necessary, therefore, to take immediate steps to provide the cash needed to meet pressing requirements.

Another accountant, who represented the banks, made an independent audit of the books, which is summarized in the following balance sheet:

BATEMAN STOVE COMPANY—REVISED BALANCE SHEET AS OF
DECEMBER 31, 1922

ASSETS	
Total Current Assets.....	\$195,660.96
Property Accounts	\$113,931.28
Less: Depreciation.....	<u>36,530.27</u>
Formulae, etc.	77,401.01
Deferred Charges	18,667.31
Total Assets	<u>449.88</u>
	<u>\$292,179.16</u>

LIABILITIES	
Current Liabilities	\$116,416.48
Accruals and Reserves.....	18,535.82
Total Liabilities	<u>\$134,952.30</u>
Capital Worth	
Common Stock.....	\$126,700.00
Surplus	
Net Earnings, 1922.....	\$ 38,973.79
Less: Deficit, January 1, 1922..	<u>8,446.93</u>
	<u>30,526.86</u>
Total Capital Worth.....	<u>157,226.86</u>
Total Liabilities and Capital.....	<u>\$292,179.16</u>

If the banks extended the loans, no assurance was offered of future repayment by the company. The loans had accumulated over the past two years. The banks were dissatisfied with the management of the company, but there was no stockholder other than the general manager who had any part in the control of the policies and operation of the company. The sales problem of the company was not a complication on account of the

company's ability to sell all that it produced. The crux of its difficulties lay in the poor management and insufficient capital. The company needed at least \$150,000 additional working capital to finance production from June 1 to October 1, when the first of the new accounts receivable became due. Control of production after that date had to be assured in order that the current assets should not consist largely of inventory, as was the case on December 31, 1922.

In presenting a reorganization plan to the stockholders of the Bateman Stove Company, the representatives of the banks were confronted with the necessity for a responsible executive control to supplant the general manager, and also with the urgent need of additional capital. Unless there was a change in management, the banks refused to extend the loans or to advance additional funds; also, outside capital or further subscriptions from stockholders could not be attracted to the company unless the general manager was replaced. The cashier of the Hendrickson National Bank proposed to two of the major stockholders that they advance \$25,000 each on condition that the other stockholders raise \$50,000; and that irrevocable proxies be secured from stockholders in favor of the two men and a representative of the banks. If this \$100,000 was secured, the banks agreed not only to extend the loans until December 31, 1923, but also to grant additional credits of \$50,000. The three men who secured the voting control under the proposed plan were to be constituted the executive committee which controlled the purchases, production, and sales policies of the company. The board of directors was to include the three members of the executive committee, the general manager and one other. The general manager was to be continued as production manager of the company. The voting trust was to continue for two years, but could be renewed by the trustees for an additional two years. The outstanding common stock was to be deposited with the Hendrickson National Bank as security for the \$100,000 loan of the stockholders. According to the plan, this loan was superior only to the capital stock and subordinate to all other debts and liabilities existant or incurred thereafter. In lieu of repayment in cash, a person advancing money was given the right to take common stock at par at any time before repayment began.

The cashier of the Hendrickson National Bank estimated that the company needed two years in which to prove the value of the proposed plan. Since the record of earnings during 1922 was 10% of annual sales in the face of poor management, little fear was entertained that under responsible control the company would work out of its difficulty.

3. ORMISTON MOTOR CAR COMPANY—REORGANIZATION OF AN AUTOMOBILE MANUFACTURING COMPANY

In the spring of 1923, an investment banking firm was endeavoring to work out a plan of reorganization for the Ormiston Motor Car Company. This investment banking firm had financed the company when it was launched in 1920. The company never had been financially successful and passed into receivership in the fall of 1922.

The company was organized in the summer of 1920 by an automobile engineer who formerly had been one of the chief designers of a motor car of one of the leading automobile companies. The car designed for manufacture by the engineer of the Ormiston Motor Car Company was an eight-cylinder car and was expected to sell for about \$3,000. Production in the automobile industry in 1917 and 1918 had been curtailed on account of the war. As a result of this low production, the demand for automobiles in 1919 was in excess of the supply. The general business prosperity of that period enabled people to buy automobiles, who had not owned them previously. Owners of inexpensive cars were enabled to buy more expensive models. To take advantage of this situation, the engineer had decided to manufacture his new car. He was convinced that it was mechanically superior to any other car which was sold for the same price. He had constructed a pattern car and the tests that were given it seemed to prove that phenomenal success might be expected. He had bought what he considered a favorable site, located on waterways and railroads, in the automobile manufacturing district of the Middle West. Construction of the plant had been begun in September, 1919. He had supplied the capital that was necessary for the building operations and did not seek the aid of bankers until the summer of 1920.

At that time, more money had to be secured to purchase

machinery and to use as working capital. The following financial plan was drawn up by the investment banking firm and was adopted. The bankers took \$1,500,000 of first preferred stock, which provided all the money that was necessary to complete the plant and machinery, and sold it to their customers. The engineer took \$1,200,000 in first preferred stock and \$3,000,000 in second preferred stock to represent the funds he had already contributed for the cost of building, real estate, and a part of the machinery. One share of common stock was given with each three shares of first preferred stock. Working capital was secured by means of a "revolving credit," which was to continue for a term of three years. Bankers participated in this plan to such an extent as they desired and received a commission of 4½% for the total amount of the line of credit which they extended. The company could use any part of or all this line for any length of time that was desired within the three-year period. The bankers received notes in such denominations and maturities as each desired for that part of the credit used, with the understanding that the company could pay off the debt with interest to date of payment or borrow again up to the full amount at any time. During such periods as the company availed itself of the credit, it was to pay the market rate of interest. About \$6,000,000 of credit was secured from commercial banks and investment bankers by this method.

In September, 1919, the company expected to be able to place 375 cars on the market in December, and it was planned to produce about 15,000 cars in 1920. The engineer informed the bankers that he did not expect the corporation either to make or to lose money in the first six months. At the end of the next six months the factory should be operating at full capacity, and a profit of \$5,000,000 might be expected.

In January, 1921, the following letter was sent to the preferred stockholders:

January 1, 1921

To OUR PREFERRED STOCKHOLDERS:

The first dividends on the first and second preferred stock of this company are due on January 1, and February 1, respectively. According to the provisions of the stock issue, dividends may be paid only out of earnings. When the stock was issued in the summer of 1920, it was believed that the first cars would be completed and sold in December

and, therefore, that the first dividends could be paid in January. In October, however, in view of the unsatisfactory conditions prevailing in the automobile industry, the company decided that it would be advantageous to delay production in order to take advantage of falling prices in labor and materials. The wisdom of this policy has been fully borne out by subsequent events. The postponement of dividend payments, therefore, will be of material benefit to the stockholders' interests in the company.

Our factory has now been completed. All machinery, plant equipment, dies, tools, jigs, and fixtures have been received, installed, and set up ready for operation. All necessary raw materials for production have been purchased. Many parts of the car are now in process in the plant. All this has been done in the most economical manner and we are ready to begin production in excellent condition. Our product is now perfected and we are on the eve of production with every confidence in the future success of our company.

We wish to assure our preferred stockholders that cumulative dividends will be paid at the earliest moment consistent with good business management.

Yours very truly,
ORMISTON MOTOR CAR COMPANY

In the months following the date of this letter, general business conditions in the automobile industry continued to be unsatisfactory and the company's financial condition failed to improve. The inventory account had to be written down materially as prices fell. The manufacturing cost proved to be higher than the engineer had estimated, and consequently the market price of the car was made higher than had been expected. Nevertheless, the car was regarded favorably by those engaged in the automobile industry and by automobile users. Its mechanical superiority and fine riding qualities were recognized. There was an active demand for the cars and the company was able readily to sell all the cars produced. In spite of this success, however, the company continued to fail to make profits. The management encountered many difficulties of administration. It was learned that the purchasing agent, for instance, had not been securing competitive bids for material, and had been paying whatever prices were asked, even though this was not customary in the automobile industry. This example was typical of the problems in administration. The costs of production were not reduced as much as had been expected and no profits resulted. It was necessary to increase the company's bank loans more than had been

expected when the "revolving credit" plan had been drawn up.

This failure to show profits continued throughout 1921 and 1922. In November, 1922, the situation became so critical that it was difficult to pay current bills.

The original "revolving credit" of \$6,000,000 already had been extended to nearly \$9,000,000 and the banks were loath to grant any more credit in view of the financial condition of the company. The following statement shows the condition of the company at that time. It was not the practice of the company to include capital stock on its balance sheet.

ORMISTON MOTOR CAR COMPANY—STATEMENT AS OF NOVEMBER, 1922
(Does not include capital liabilities)

ASSETS	LIABILITIES
Land, Buildings and Ma-	Loans and Mortgages. \$ 371,595
chinery \$ 5,140,722	Accrued Pay-roll, Taxes,
Cash 9,651	and so forth 157,602
Notes Receivable 84,672	Notes and Acceptances. 719,040
Accounts Receivable 16,668	Accounts Payable 2,917,599
Inventories 2,390,788	Dealers' Deposits 14,790
Deferred Charges 130,232	Revolving Credit 8,912,422
Deficit 5,374,666	Dealers' Reserves 54,351
Total \$13,147,399	Total \$13,147,399

In December, 1922, one of the creditors who had been supplying the company with steel, petitioned the company into bankruptcy. A receiver was appointed by the courts to carry on the business of the Ormiston Motor Car Company until such a time as the property could be sold or until a plan of reorganization was drawn up which was satisfactory to all creditors.

The first step of the receiver was to reorganize the management, to dismiss such executives as had been unsatisfactory, and to employ new men to replace them. The engineer was retained as president of the company. Few automobile engineers existed who knew more of the technique of manufacturing motor cars. After this change in management, the receiver was able to show profits for the company and there remained only the need for a complete financial reorganization.

The investment banking firm immediately commenced to draw plans for this reorganization. One proposed plan after another was submitted to the committees representing the various interests, but none of them appeared to be satisfactory. In May,

the receiver became impatient and threatened to sell the property of the company at public auction. Another plan was drawn up by the investment bankers and was submitted to the committees. On account of the stimulus of the threatened sale, each committee expressed approval of the plan if it was satisfactory to the bankers.

The plan called for the organization of a new corporation to purchase the assets of the Ormiston Motor Car Company from the receiver. The new corporation was to carry on the business formerly conducted by the Ormiston Motor Car Company. The authorized capitalization of the new organization was as follows:

\$7,500,000 par value 7% prior preference stock, cumulative after January 1, 1924

\$7,500,000 par value 6% first preferred stock, cumulative after July 1, 1924

\$7,500,000 par value 6% second preferred, non-cumulative stock, convertible into common stock at \$30 a share

600,000 shares, no-par-value, common stock

All shares of stock both common and preferred were to have equal voting powers.

The plan called for raising about \$5,000,000 in cash to be used in making part payment for the purchase price of the Ormiston Motor Car Company at the receiver's sale. The balance was to be turned over to the new corporation as a working capital.

The cash was to be raised as follows: holders of the "revolving credit," which amounted to about \$6,600,000, were to subscribe 30% of their claims in cash and were to receive therefor an equivalent amount of prior preference stock at par, and, in addition, 50% of the amount of their claims in new second preferred stock. About \$1,980,000 in cash was assured for which it was necessary to issue \$1,980,000 par value prior preferred stock, and, in addition, \$3,300,000 of second preferred stock for 50% of their claims, if the holders of the "revolving credit" assented to the plan and exercised their privileges.

The holders of the first preferred stock of the Ormiston Motor Car Company were to subscribe in cash 30% of the par value of stock held by them and were to receive therefor an equivalent amount of prior preference stock at par, and, in addition, an amount of second preferred stock equal to 40% of the par value

of the preferred stock held by them. By this means \$800,000 in cash was to be raised and \$800,000 par value prior preference stock and \$1,200,000 par value of second preferred stock of the new company were to be issued.

The engineer who held the entire second preferred stock of the Ormiston Motor Car Company was to receive nothing therefor. The common stockholders of the old company also were to receive nothing.

The plan also called for the sale to the engineer and to the investment banking firm of \$880,500 prior preference stock, \$76,500 par value of second preferred stock, and 300,000 shares of common stock of no par value for the sum of \$2,887,500 in cash. If all holders of the deferred liabilities and first preferred stock should participate in full for their rights, about \$5,767,000 of new cash was assured and the original issue of stock of the new company was approximately as follows:

\$3,769,000 par value prior preference stock
\$6,000,000 par value first preferred stock
\$4,476,000 par value second preferred stock
450,000 shares, no-par-value, common stock

All holders of the deferred liabilities and first preferred stock who assented to this plan were to assign all claims against the Ormiston Motor Car Company as representing the issue of new capital. The new company was to acquire the assets of the Ormiston Motor Car Company purchased at the receiver's sale and all the \$5,767,000, except such a portion thereof as was needed to make part payment of the purchase price of the receiver's sale. The investment banking firm recognized its responsibilities both to the company which it financed and to its customers to whom it had sold preferred stock. Partners of the firm were of the opinion that any plan of reorganization should meet these responsibilities in full. The proposed plan called for meeting the responsibilities of the Ormiston Motor Car Company by the purchase of stock for cash outlined above. It was suggested by some of the partners of the firm that the firm's responsibilities to the preferred stockholders should be met by offering to make subscriptions for such stockholders as did not desire to make new cash subscriptions. The firm would take such prior preference stock as was received in exchange. The

partners were of the opinion that the purchase by the firm of securities for cash as mentioned was also an advantage to other stockholders and that its responsibilities to them were partially met in this way.

4. LOUISELL IMPLEMENT COMPANY—REORGANIZATION PROPOSAL OF CREDITOR BANKS WHEN ASSETS HAD BECOME FROZEN¹

There were 11 meetings, between January and October, 1922, of the reorganization committee representing the 12 most influential creditor banks of the Louisell Implement Company. This committee also represented 200 country banks which held commercial paper of the company. Efforts were made during this time to extricate the company from its precarious financial condition and to obviate the necessity of bankruptcy or of extensive reorganization. On October 1, 1922, a meeting was called of the bankers' committee to review the condition of the company and to ascertain its progress under the banks' supervision.

The Louisell Implement Company had been established for 80 years. In 1922, its products were wood and steel threshing machines, gas and steam tractors, and portable sawmills. Five subsidiaries marketed the products and rendered repair service in the middle- and far-western states. Inventories were maintained at each subsidiary. Because of the excellent reputation of the company, and its products, banking connections had been established in six cities. There had been a good market for its paper. The company had been a consistent borrower. During 1919 and 1920, it had secured unusually large loans which were converted into inventory and receivables. These credits were carried by borrowings from banks. The length of credit to customers of the Louisell Implement Company ranged from two to four years.

The 1920 balance sheet showed an inordinate increase in the inventory and notes receivable accounts; they composed 90% of the current assets and 73% of the total assets of \$7,674,000. The sales for 1919 had been \$2,869,000 with a net profit of \$192,000; in 1920, \$2,396,000 with a net profit of \$113,000.

¹For discussion of the agricultural depression of 1920 see *Report of Joint Commission of Agricultural Inquiry*, House Report 408, 67th Congress, 1st Session; and "The Agricultural Depression," by G. F. Warren, *Quarterly Journal of Economics*, vol. 38, p. 183.

Sales had declined abruptly in the latter part of 1920, and the customers of the company were not reducing their obligations. Accrued interest of \$152,000 on notes receivable had been carried as an asset on the balance sheet. In 1920, \$3,019,000 had been borrowed, which was a substantial increase over 1919. Apparently the company had an excessive inventory, since the ratio of sales to inventory for 1920 was only 0.75 times. The inventory had not been written down at the end of the year to the market value.

In May, 1921, the Wettin National Bank, which held a note of the Louisell Implement Company, did not wish to renew the notes it held. Two months later the bank asked the company to make a reduction in the principal of its note. The company could not comply. Thirty days later, renewal was delayed on a note which the company forwarded to the bank. The president of the Louisell Implement Company stated that failure to renew this note would cause the company embarrassment. After two meetings of the bank's vice-president with the president of the company, the note was extended.

Between the dates of these conferences, the bank had investigated the condition of the subsidiaries and had concluded that the profits secured did not justify their continuance. For example, one branch had \$500,000 in inventory, and a like amount in receivables. Exclusive of the other investments, this branch showed a turnover of sales to investment of one-half, since sales for 1920 had been \$500,000. The bank, therefore, suggested that operations at the subsidiaries be curtailed, and every effort made to reduce notes payable. As shown in the 1921 statement, notes receivable were \$2,438,000 and accrued interest was \$190,000, as compared with \$2,384,000 and \$152,000 in 1920. Sales had declined from \$2,396,000 to \$1,104,000. During the year, \$765,000 had been collected on notes receivable, and an equal amount on sales for the year. It was necessary to reduce the sales effort since most customers requested credit. The operating loss for the year was \$87,000. Inventory had been written down \$278,000. The inventory on the balance sheet was \$3,233,000 in 1920 and \$2,700,000 in 1921. At the beginning of 1922, the banks had doubted that the inventory had been written down in proportion to the decline in implement prices. Inventory and receivables were 92% of current assets and 73% of

the total assets of \$7,076,000. The plant figure rose from \$1,322,000 to \$1,352,000.

Several notable changes in liabilities had occurred: notes payable had increased from \$3,019,000 to \$3,175,000; reserve for depreciation had been reduced from \$653,000 to \$395,000; surplus had decreased from \$1,969,000 to \$1,705,000; and undivided profits declined from \$441,000 to \$236,000. The sale of commercial paper of the subsidiary companies endorsed by the parent company had increased notes payable.

In 1920, notes payable had constituted 39% of the total liabilities, and in 1921, 45%. The surplus in 1921 had been 25½% of the total liabilities and in 1922 had declined only 1½%. In 1920, the current ratio had been 1.9; in 1921, it had decreased to 1.6.

When the 1921 statement came out, the banks had called the first meeting to consider the situation. Twelve depository banks had been involved with loans ranging from \$95,000 to \$575,000 each. In addition, there were almost 200 small country banks which owned \$2,500 to \$10,000 of the paper sold by note brokers. The company stated that it was impossible for it to pay the notes; it had tried to collect receivables but, although the farmers signified their willingness to pay eventually, they could not do so for three or four years. If the company tried to force payment, the farmers were likely to turn back the machinery, since the replacement price of each type of implement was substantially lower than the face of the note which the company held. Sales had not increased and it had been believed that economies might be effected by shutting down the plant. This was impracticable, however, because the farmers refused to meet their obligations, if repair parts were not constantly available.

The vice-president of one of the depository banks, after attending a meeting on March 18, 1922, had written to a vice-president of the Wettin National Bank:

To sum up the situation, it looks to me, based on what knowledge I have of conditions, that the management is honest but somewhat inefficient; the business has gone to seed to a considerable extent, and the company, while solvent, is in for a long period in which its inventories must be liquidated to a substantial amount, its business contracted and put on a more efficient operating basis, and eventually, long-time capital put in either in the form of bonds or preferred stock.

On April 3, 1922, the banks had decided to renew the notes which they held, at or before maturity at 7%, and to require payment in full by December 1, 1922. In order to complete the manufacture of raw material to be sent to subsidiaries for the 1922 season, the banks had agreed to lend the company the necessary \$125,000, secured by \$200,000 of the farmers' paper. Subscriptions to this loan by each bank had been made at the rate of 2½% of the company's credit line, and no bank was asked to give more than 5% of existing loans. The company's operations had begun so late in the year, that sales were lost to competitors. By October 1, 1922, the total sales for the company were only \$808,000.

The balance sheet of October 1, 1922, showed notes receivable of \$2,556,000, a slight increase over 1921, and accrued interest of \$198,000. This, with an inventory of \$2,105,000, constituted 94% of the current assets and 71% of the total assets. Plant and real estate remained the same. No further reduction had been made from surplus which on October 1 constituted 49% of the total liabilities. The amount of stock outstanding, \$513,000 preferred and \$762,000 common, had remained unchanged since the company's incorporation. The current ratio had declined during 1922 from 1.6 to 1.4. It was improbable that the company could more than pay the \$125,000 loan that had been granted in April. Default would result on December 1, if a plan were not evolved by the banks to reorganize the company's finances.

Accordingly, a bankers' meeting was called for October 1 to decide whether to liquidate the assets of the company or to attempt reorganization. If the assets were liquidated, it was estimated that the banks would not recover more than 20% of their loans because of the peculiar condition of the notes receivable. Reorganization necessitated elimination of the incapable management and the installation of new officers who could manage the company effectively in trying financial periods. There were minor executives competent to fill the important administrative positions. Working capital of \$625,000 also was required.

During the preliminary bank negotiations, there were four of the twelve banks which desired liquidation. Their representatives believed that further financial assistance was useless, and,

moreover, they wished to release their capital which had been invested in the company for more than two years and not make an additional investment in the reorganized company. Conditions in the industry, furthermore, did not appear conducive to an expeditious or substantial recovery of sales.

The majority of the banks advocated a friendly reorganization, stating that, since they had been lenient for over a year, this policy should be continued and an effort made to reorganize the company. They were confident that it was possible to realize eventually 100% on the loans, hence a sacrifice of 80% of principal through liquidation was not justifiable. These banks further contended that the company had a valuable asset in the good-will created by the satisfactory performance of the products manufactured by the Louisell Implement Company for 80 years. In the event of liquidation this was likely to yield little return.

The eight banks which recommended reorganization advised the formation of a holding company to take over the real estate of the Louisell Implement Company and assume 50% of its bank obligations. The holding company would authorize \$2,000,000 issue of bonds to be given to the banks for approximately 60% of their loans. This would leave the operating company with assets of \$5,100,000 to pay the remaining 40% of the debts to the banks. The majority banks advised the discontinuance of the branches, because of their remoteness, and a concentration of the company's sales in the central states. They also recommended that portable sawmills, several models of tractors, and wooden threshing machines be eliminated from the company's line. In the manufacture of the last product, it was necessary to season the lumber for two years, consequently capital required for three years' supply of lumber was unavailable. On the other hand, a 60-day turnover of material was obtained in the production of the steel thresher. The creation of the holding company and the segregation of assets would make it possible to secure merchandise credit and furnish easy methods of preferred security for the advances which might be made by banks for the company's seasonal operations.

Under the majority banks' plan the operating company was to pay the taxes, and all interest on indebtedness. Earnings and funds received from the collection of bills receivable outstanding, above the amount advisable to retain for the company's

operations were to be paid as rent to the holding company. The holding company was to apply the proceeds to the payment of outstanding indebtedness of the existing company.

Should the minority banks have adopted the proposed plan?

5. ASHLEA NATIONAL BANK—EXTENSION OF CREDIT TO COMPANY TO PREVENT RECEIVERSHIP

The Ashlea National Bank for several years had extended a line of credit to a small rubber and tire manufacturing company in the Middle West. This company had been conducting its business successfully from 1915 to 1920 and had been able to make a profit on its investment. It, however, had never made large earnings, as had many of its competitors in the industry during these years. During the latter part of 1920 and the first part of 1921, the company incurred severe losses and became unable to pay its creditors. In June, 1921, the Ashlea National Bank, together with other banks which had extended credit to the company, discussed the problem of whether to force the company to liquidate and pay what it could to its creditors or whether to loan the company more money and assist it to solve its financial difficulties.

The Ashlea National Bank attributed the losses of the company to three principal causes: first, to the severe decline in rubber prices which had resulted in losses in inventory; second, to the number of contracts canceled by the company's customers; and third, to inefficient management. The Ashlea National Bank and the other banks did not consider any of these causes to be permanent and, for this reason, disliked to force the company into receivership. If such a policy were adopted, there was the difficulty of selling the property for an amount that approximated the true value of the property. Buyers in negotiations for sale would have the advantage of knowing that the liquidation was forced. On the other hand, the creditors could obtain 60% to 75% of their claims from the liquidation of quick assets after current liabilities had been paid. The proceeds from the sale of the plant should have paid 15% or 20% of their claims in addition. Under this plan, however, there was nothing left for the stockholders.

In the event that the bank creditors allowed the company to

continue its operations, it was necessary for them to advance the company additional capital. The amount required, however, did not affect the current position of any of the banks to any appreciable extent. Although the demand for rubber goods had been poor and prices of rubber had been declining rapidly, the bankers did not expect this condition to continue. It was their opinion that the business depression was practically ended and that a marked improvement was about to begin. They stated that the rubber and tire industry had been overexpanded in 1918, 1919, and 1920, but they did not regard the expansion as greater than in many other industries. The demand of the country for tires and rubber articles was increasing and they did not hold that the productive capacity of this industry was likely to continue in excess of the demand. The management of the company was not so efficient as it should have been. Although a few of the chief executives were as able as most in that industry, several were not acceptable to the banks. The latter, however, could be dismissed and other men put in their places to form a management entirely agreeable to the bank creditors.

The Ashlea National Bank doubted whether this plan of carrying on operations was likely to be successful. The executives of this bank were not certain that conditions in the rubber industry were to improve immediately. They were of the opinion that recovery from the business depression might not take place as soon as was the opinion of the other banks. They were of the opinion, furthermore, that the overexpansion of the industry in 1919 and 1920 might make competition in the rubber and tire industry so severe, when business recovery came, that small companies could not compete successfully with the four or five leading rubber manufacturers. The other bank creditors who were in closer relations with the company did not hold these opinions and were strongly in favor of adopting the plan. The Ashlea National Bank did not wish to handicap the solution of the problem by opposing the opinions of the other banks who were in the majority. Its apprehensions were not so great as to lead it to go against the wishes of the other banks. The decision finally was made by the Ashlea National Bank and the other banks to lend the company more capital and to assist it to extricate itself from its difficulties.

ASHLEA NATIONAL BANK—COMPARATIVE BALANCE SHEETS
(In thousands of dollars)

	July 1 1919	July 1 1920	Jan. 1 1921	Jan. 1 1922	Jan. 1 1923	Mar. 1 1923	April 1 1923
Current Assets							
Cash.....	166	121	128	169	263	187	118
Notes Receivable.....	44	60	11	26	..	..	..
Accounts Receivable.....	1,079	1,200	669	227	583	673	740
Inventories.....	4,291	4,486	1,618	860	941	1,049	1,054
Government Securities.....	66	..	..	..	12	..	..
Stocks Paid in.....	25	..	..	..	..	..	..
Total Current Assets.....	5,671	5,867	2,426	1,282	1,799	1,909	1,921
Fixed Assets							
Buildings and Machinery.....	2,483	2,441	2,340	2,192	2,125	2,118	2,114
Investments.....	162	112	110	..	49	51	51
Prepaid Expenses.....	68	56	35	13	8	11	13
Miscellaneous.....	99	56	51	110	10	10	10
Patent Rights.....	1	1	1	1	1	1	1
Due on Stock.....	165	58	40	..	..	..	..
Officers Stock Contracts.....	114	..	..	..	..	..	..
Deficit.....	..	..	..	3,350	3,484	3,521	3,525
Total Assets.....	8,763	8,591	5,003	6,948	7,476	7,621	7,635
Current Liabilities							
Bank Loans.....	2,411	1,834	1,069	1,118	1,329	1,302	1,315
Acceptances.....	..	142	55	..	635	750	750
Notes Payable for Mdse.....	..	283	79	..	..	..	..
Accounts Payable.....	855	893	353	350	110	158	168
Accrued Liabilities.....	115	17	1	45	51	62	61
Due for Taxes.....	..	48	38	..	..	..	..
Land Contract.....	8	8	8	8	8	8	8
Total Current Liabilities.....	3,389	3,325	1,603	1,521	2,133	2,280	2,302
Mortgage on Real Estate.....	5	5	5	5	5	5	5
Reserves.....	1	35	57	77	57	55	49
Common Stock.....	5,368	5,326	3,338	5,345	5,281	5,281	5,279
Total Liabilities.....	8,763	8,591	5,003	6,948	7,476	7,621	7,635
Net Quick.....	2,282	2,642	823	239*	334*	371*	381*
Current Ratio.....	1.67	1.81	1.51	.84	.84	.83	.83

* Deficit

During the remainder of 1921 and in 1922, conditions in the rubber industry did not improve as the other banks had expected. The company failed to make the desired profits. In one or two months profits had been realized but, for the most part, losses were incurred. The company's reputation with its customers and creditors steadily declined. In April, 1923, the banks decided that there was no alternative but to liquidate the company. The possibility of reorganizing the company and selling new securities was considered negligible because of the unfavorable financial position of the company. In May, all the assets of the company were sold to a stronger rubber company, which had been nego-

tiating for some time to buy them. Common stock of the purchasing company which, at the current selling price of the stock, gave the creditors about 35% of their claims, was taken in payment.

6. FERRENDEN COMPANY—LIQUIDATION OF INVENTORY AT A LOSS IN ORDER TO PROVIDE WORKING CAPITAL¹

The Ferrenden Company tanned calfskins and sold fine calf leather. The drop in prices for its product in the latter half of 1919 and in the early months of 1920 caused the inventory to decline precipitately in value. In May, 1920, in order to permit further manufacture and to reduce the loss which the 1920-1921 profit and loss account would show, the question of providing working capital was considered.

Tanneries secured the best skins through brokers, who, in turn, purchased them from the dealers. A single broker frequently acted for several competing tanners, and, in many cases, advised a company not to bid so high a price as it had. This advice was based upon market conditions and the offers of competitors. There was no open market, and no quotations were published regularly; because of the rulings of the Federal Trade Commission, it was impossible to indulge in regulating "bid" prices openly, but brokers were extremely helpful in preventing a client from bidding higher than was necessary. The Ferrenden Company imported about 50% of its calfskins. These came chiefly from central and northern Europe, from Australia and from New Zealand. Domestic skins were most plentiful in March and April, whereas the supply from the southern hemisphere came on the market in August and September. In the United States, the "Easter" skins were the choicest and, consequently, it was desirable for a tanner to make extensive purchases at that time.

The customary procedure in consummating foreign purchases was to have the brokers buy the skins and draw on the Ferrenden Company against shipping documents. The shipment was carried by the foreign bank until the documents reached the United States, when the draft was met by the importer. Domestic brokers, in like manner, drew on the Ferrenden Company against bills of lading. Since it was necessary to make these payments

¹*Letters*, vol. 1, p. 5 and vol. 2, p. 72.

before the skins arrived at the tannery, it was necessary to have adequate funds when the supply was sufficient and the market favorable.

Fine calf leather was sold to shoe manufacturers. Of the countries tanning calfskins, only the United States and Germany exported leather of this sort in any quantity. During the World War, the companies in the United States secured a substantial portion of the trade which had been held previously by Germany.

The Ferrenden Company exported about 50% of its total output. Various arrangements were resorted to in order to finance shipments. Many buyers were granted 60- to 90-day terms from date of shipment, although numerous companies were drawn on at sight. The average time during which the Ferrenden Company waited for payment was about 60 days. It made use of the American Foreign Credit Exchange¹ to guarantee the solvency of many of its foreign customers.

Domestic sales bore the terms 5%, 30 days; 4%, 60 days, while a few of the customers paid within 10 days and received an extra trade discount as well as the regular discount of 5%.

The Ferrenden Company was a close corporation, which had expanded gradually by turning back earnings into the business. It was capitalized at \$100,000 but in 1918 had a surplus of nearly \$1,000,000. Over \$400,000 was invested in United States bonds and Treasury certificates as a provision against emergencies, and, consequently, it was necessary to borrow from banks, in order to finance accounts receivable, inventories, and skins which were in process for 45 days.

Stimulated by government needs and by increased foreign demands, production during the war was maintained at a high level. As may be seen from the appended table, the prices of calfskins rose violently in 1919.² The Ferrenden Company forecast this rise and, consequently, purchased only those skins which were absolutely necessary in order to insure raw materials to maintain production. Thirty days' supply was considered a safe margin. The management knew that, over a period of time, the supply of calfskins exceeded the quantity which could be con-

¹ *Harvard Business Review*, vol. 1, pp. 248-251, explains the operations of this Exchange.

² See page 146 for footnote.

sumed by shoe manufacturers. Since they were by-products, the demand could not influence the supply materially.

Early in 1920, the price of calfskins was definitely weaker. Fortunately, the Ferrenden Company compiled its annual balance sheet on April 30. By this time, the downward trend of prices was apparent, and the officers, consequently, insisted that all the raw materials and leather on hand should be written down to market value. The loss which was taken at this time was large, but was insufficient to wipe out the profit which had been made during 1919, when sales expressed in dollars were more than twice those made during the previous year. Even with these losses, the Ferrenden Company paid \$100,000 in dividends and added \$122,000 to "Undivided Profits" account. The reduction in profits caused by the depreciation of inventory permitted substantial reductions in payments on account of government taxes. The balance sheet on April 30, 1920, did not injure seriously the company's standing with the banks. There was a slight increase in accounts payable over 1919, but the current ratio was about 1.6 to 1. The balance sheets for April 30, 1918, 1919, 1920, and 1921, are given on the opposite page.

Prices of skins continued to recede as 1920 progressed. In June they had declined to \$3.50 from the high point of \$10.25 of August of the previous year. Prices of tanned leather fell also, at a slightly slower rate, but the reductions were almost as extensive. Further declines in inventory were registered. The seriousness of the situation was apparent from the following experience. In October and November, 1919, since the Ferrenden Company's competitors had had favorable experience in "French veals," it purchased "at the market" 1,000 dozen skins of this vari-

(See page 145 for reference)

Prices of Number One Calfskins at New York

	1917	1918	1919	1920
January	\$5.00	\$3.40	\$3.60	\$8.00
February	4.00	3.55	4.75	7.75
March	4.50	3.55	4.40	6.50
April	4.50	3.60	4.88	6.00
May	3.75	4.00	5.10	5.00
June	3.50	4.00	5.75	3.50
July	3.75	4.00	7.50	2.75
August	3.50	4.00	10.25	2.50
September	3.25	4.00	8.00	2.00
October	3.40	4.00	8.50	2.25
November	3.80	3.60	9.00	1.60
December	3.60	3.60	8.50	1.45

THE FERRENDEEN COMPANY—COMPARATIVE BALANCE SHEETS AS OF
 APRIL 30, FOR YEARS 1918-1921
(In thousands of dollars)

ASSETS	1918	1919	1920	1921
Cash	41	18	73	10
Notes Receivable	..	5	7	30
Accounts Receivable	521	435	632	439
Inventory	146	900	1,518	667
Advance Payments	..	67	..	9
Real Estate, Machinery, and Equipment	179	348	368	373
Prepaid Insurance and Interest	6	13	32	12
Certificates	406	358	..	..
Sundry Investments	4	4	6	21
Life Insurance	13	15	17	19
Total	1,316	2,163	2,653	1,580
LIABILITIES	1918	1919	1920	1921
Notes and Drafts Payable	10	896	445	402
Accounts Payable	275	131	950	127
Surplus	931	1,036	1,158	951
Capital Stock	100	100	100	100
Total	1,316	2,163	2,653	1,580

INCOME ACCOUNT, YEAR ENDING

	April 30, 1919	April 30, 1920	April 30, 1921
Sales	2,520	5,407	2,698
Cost of Sales	2,381	5,016	2,895
Selling Expense	109	200	126
Profit	30	191	323*

* Loss

ety, which were sufficient to occupy the tannery for two days. When the leather was ready for sale, it was found that, although it had cost \$1.12 per foot to produce, it could be sold for no more than 28 cents. Thus, in this instance alone, there was a loss of \$98,000. The results were the same with other lots of skins, so that in the middle of 1920, in order to inventory everything at its market value, it was necessary to take a total loss of approximately \$1,000,000. The directors of the company were of the opinion that the trend of prices was to be downward for a long time and were anxious that the banks should not suspect the

company's condition. Several of them deemed it the most feasible policy to dispose of the leather which was in stock immediately at the highest price obtainable, in order to secure money with which to purchase new skins at lower prices, that could be tanned at a profit. By this procedure, they hoped to diminish the loss, to be shown by the profit and loss account for 1920-1921.

The alternative was to hold the leather for higher prices, to present the case to the banks, and frankly to ask for assistance. If the sudden decline in price was followed by a substantial recovery a material reduction of the loss was likely to occur. In the meantime, however, further purchases of new skins were to be made. The banks might have been prevailed upon to extend the existing loans, but additional advances were doubtful because of the fact that, in the summer of 1920, demands for the extension of loans were being made from many businesses, and funds were inordinately difficult to obtain. But if no raw material was available, the tannery would be forced to suspend operation. Although other industries in the vicinity were reducing their forces, an interruption in production meant a permanent loss of a portion of the 400 employees of the Ferrenden Company. Since many of them had been with the company for years, waste of experience was the inevitable result.

The final decision of the directors was in accord with the former solution. Despite losses (extensive enough to consume the surplus) which it was necessary to recognize, it was decided to sell the finished leather at once for cash and to invest the money in new skins, which could be tanned at a profit.

7. DESMOND REFINING COMPANY—LOAN FROM BANKERS REPRESENTING THE PREFERRED STOCKHOLDERS TO AVOID REORGANIZATION

A committee which represented preferred stockholders was in control of the Desmond Refining Company. It was dominated by representatives of banking firms which had sold the stock to the public. The company was organized to refine crude oil and distribute oil products in the Middle West. It had been exceptionally successful until in 1921, when serious inventory losses weakened the company financially. Since the management was unable to extricate the company from its financial difficulties,

dividends on the cumulative preferred stock were not paid. The fourth successive quarterly dividend was passed on October 1, 1922, and the terms of the company's charter provided for the control of the company to pass to the preferred stockholders. The common stockholders, however, refused to relinquish it until July, 1923. At that time a court decision allowed the preferred stockholders' committee to elect a board of directors, who took charge of the company's affairs. Meanwhile, additional losses were incurred from operations, and the need for working capital became acute. The preferred stockholders' committee had to decide whether to reorganize the company through a receivership, or to advance the funds necessary to continue operations.

The Desmond Refining Company owned five refineries, with an aggregate daily capacity of 48,000 barrels of crude oil. Although it possessed 62,500 acres of oil lands, development of oil wells was not successful, and most of the crude oil refined was purchased from other producing companies. The products distributed by the company were gasoline, lubricating oil, wax, fuel oil, naptha, linseed oil, and turpentine. The company owned 1,000 main distributing stations located in Missouri, Oklahoma, Arkansas, Texas, Louisiana, and Illinois. Its marketing facilities were well organized and were the chief factors which contributed to the former success of the company.

In September, 1919, a syndicate of investment bankers had sold \$15,000,000 of the company's 8% cumulative preferred stock to the public at 105. The purpose of this issue was to refund \$2,000,000 of notes and \$10,000,000 of debenture bonds, and to provide the additional capital necessitated by the expansion in the company's activities.

The company had not foreseen the crisis of 1920, and in 1921 an inventory loss of \$4,500,000 was incurred. In order to secure cash during 1922, the company sold a portion of its accounts receivable, and hypothecated its inventory of oil in tanks. On October 1, it was unable to pay \$300,000 preferred dividends which were due. The loss from operations in 1922 was \$1,000,000, and this amount was increased to a net loss of \$3,900,000 for the year by charges for depreciation and interest on funded and floating debts. Additional charges which applied to prior years, but had not been made, were \$3,300,000. The total loss of \$7,200,000 for the year 1922 absorbed the surplus of

DESMOND REFINING COMPANY—COMPARATIVE BALANCE SHEETS

ASSETS	June 30, 1923	Dec. 31, 1922
Cash in Banks and on Hand.....\$	553,800.00	\$ 469,900.00
Notes and Accounts Receivable		
Less Reserves	1,625,100.00	1,310,000.00
Inventories of Crude Oil, Refined Products, and Merchandise....	6,140,300.00	5,982,400.00
Supplies	716,400.00	868,100.00
Prepaid Items	129,500.00	195,600.00
Tank Cars, Tank Steamers, and Equipment	4,343,600.00	4,604,200.00
Miscellaneous Investments	154,800.00	177,400.00
Sinking Fund Assets	85,000.00	
Oil Lands, Leaseholds, Pipe Lines, etc., Including Capital Stock of Subsidiary and Advances to It.	23,092,500.00	23,341,900.00
Real Estate, Buildings, Plant and Equipment at Refineries and Distributing Stations	10,561,300.00	10,696,300.00
Total Assets	\$47,402,300.00	\$47,645,800.00
Discount on Capital Stock	1,043,900.00	1,043,900.00
Deficit	5,685,900.00	4,417,700.00
	<u>\$54,132,100.00</u>	<u>\$53,107,400.00</u>
LIABILITIES	June 30, 1923	Dec. 31, 1922
Notes Payable Secured by Pledge of Inventories of Oil Stocks and Other Assets	\$ 620,500.00	\$ 974,000.00
Notes Payable Secured by Note of Subsidiary Indorsed	1,200,000.00	600,000.00
Trade Acceptances	1,619,600.00	847,200.00
Accounts Payable and Accrued Liabilities	2,151,800.00	2,138,400.00
Reserve for Claims	2,132,400.00	2,125,000.00
Ten-Year 8% Sinking Fund, Gold Debenture Bonds Due 1931..	1,785,000.00	1,800,000.00
Preferred Stock	15,000,000.00	15,000,000.00
Common Stock	29,622,800.00	29,622,800.00
	<u>\$54,132,100.00</u>	<u>\$53,107,400.00</u>

\$2,800,000 at the beginning of the year and left a deficit of \$4,400,000 on the balance sheet. Operating losses continued in 1923, and the net loss for the first six months totaled \$1,300,000.

The balance sheets of December 31, 1922, and of June 30, 1923, are given on the opposite page.

On June 30, 1923, the company was contingently liable for \$636,800 for customers' accounts receivable sold but uncollected. Unpaid preferred stock dividends amounted to \$1,800,000. Suits and claims for approximately \$656,000 had been filed against the company but had not been adjudicated. A judgment against the company for \$2,000,000 for a breach of contract had been secured by a customer, and the decision was on appeal by the company.

The weak financial condition of the company at the time the preferred stockholders secured control made the sale of securities of any description to the public impossible. The company's credit standing was destroyed almost wholly. In order to continue operations, however, it was essential to secure cash. On June 30, the company defaulted on the sinking fund requirement for debenture bonds issued in 1921. Federal, state, and local taxes were long in arrears. Trade acceptances to pay for crude oil and gasoline were outstanding in excessive amounts, and merchandise accounts were long overdue. The working capital was entirely inadequate for proper conduct of the company's activities. Approximately \$600,000 in cash was required.

If the company were reorganized through a receivership, to permit the continuance of operations, the liabilities could be scaled down and operations could be resumed by a new corporation not burdened by excessive debts. Inordinate interest charges, totaling 13.5% to 17.5%, had been incurred when accounts receivable had been sold and inventories pledged. The amount of fixed charges could be reduced. Reorganization was the surest means for relieving the company from its difficulties.

The inevitable result of reorganization, however, was assessment of stockholders. Since the preferred stockholders possessed the controlling interest, the chief financial responsibility was sure to fall on them. It was impossible to foresee the exact effect of reorganization on the preferred stockholders, but control was likely to pass to bondholders and creditors.

It was suggested, therefore, that operations of the company should be continued despite the deplorable state of its finances. The required cash could be obtained from two principal preferred stockholders and the bankers on unsecured notes. It

was the policy of the latter to protect the interests of holders of securities which they had sold. This course preserved the interest of preferred stockholders in the corporation. In the opinion of the preferred stockholders' committee, the management elected by the board of directors which represented the common stockholders lacked the necessary ability to conduct the company's affairs profitably. An eminent engineer who was consulted made an investigation and reported that many operating economies were possible. Facilities for distribution were well organized and the potential earning power of the assets was not in doubt. The lack of profits during the preceding year was caused by the disorganized conditions in the industry, in addition to incapable management. With improvement in the oil industry and a new management, it was possible that a profit could be earned.¹ If cash were loaned by the bankers and the two principal preferred stockholders in order to continue the operations of the company, additional capital might be secured subsequently from the public. The reputation of the company among its customers might be injured by receivership.

Whether or not additional cash might be required in the following months depended on the improvement of conditions in the oil industry and the length of time necessary for the policies of the new management to become effective. There was no certainty that the company, even under new management, could survive. A loan of cash might serve only to postpone receivership. Thus a loss of the money loaned, in addition to the original investment in preferred stock, might be incurred. Because of the excessive stocks of oil and the new sources of supply which had been developed, an immediate improvement of conditions in the industry was unlikely.

The bankers opposed reorganization because of its injurious

¹One of the bankers had a similar experience in the Chaplin Tea Company. In this instance, the management had developed the company from a small beginning until it was one of the principal corporations of its kind. Inventory losses in 1920 made the company insolvent. The financial condition was so weak that, if a receiver had been appointed, liquidation of the assets for the benefit of creditors would have resulted. The preferred stockholders who were in control, however, loaned additional capital and continued the business under new management. At the time, the situation seemed even more hopeless than that of the Desmond Refining Company. The new officers, however, liquidated assets which were not essential, enforced rigid economies, and reorganized operations. The result was that a profit was shown within a year, and the investment of preferred stockholders remained intact.

effects on the reputations of their firms among investors. The two preferred stockholders who supported the plan were willing to lend additional funds because their combined holdings were in excess of \$3,000,000. The committee, therefore, decided to continue the operations of the company. New officials were appointed, and the engineer who had been consulted was retained as chairman of the board.

8. FAIRFAX NATIONAL BANK—PURCHASE OF THE DEPOSITS OF A WEAKENED BANK IN PREFERENCE TO THE PURCHASE OF ITS ASSETS

On December 31, 1921, an organization of the clearing-house banks of a mid-western city decided that the weak condition of one of its members, the Milton National Bank, and its allied bank, the Milton State Bank, did not justify continuance of banking operations. It was apparent that unwise investments and the condition of a portion of the loans provided insufficient security for the liability of the banks to their depositors. Two measures had been considered: first, to throw the Milton banks into the hands of a receiver; second, to recommend the assumption of deposit liabilities and the gradual liquidation of assets by one of the member banks. If a receivership had been recommended, failures of other financial and industrial organizations of the city probably would have resulted. The amount of the deposit liabilities, however, limited the possible purchasers to two banks, the Fairfax National Bank and the Bradshaw National Bank.

The Fairfax National Bank had the largest resources of any bank in the city. The Bradshaw National Bank was the second bank in the city in amount of resources. The difference in the resources of these two banks was greater than the total resources of the Milton National Bank and the Milton State Bank, which were the weakened institutions. However, if the Bradshaw National Bank were successful in its bid, its competitive situation would be strengthened substantially. Even though the purchasers were limited to the two leading banks of the city, it was considered advisable by the clearing-house banks to recommend that these two banks submit bids for the deposits of the banks which were to be closed.

It was considered necessary for the protection of Milton depositors to effect a merger or sale before banking hours the morn-

**STATEMENT OF THE CONDITION OF THE FAIRFAX STATE BANK
AT THE CLOSE OF BUSINESS, DECEMBER 31, 1921**

RESOURCES		
Time Loans		\$16,378,702.79
Demand Loans	\$13,808,689.87	
Bonds and Securities	16,166,940.39	
Due from Banks	29,478,595.08	
Cash	<u>1,598,755.41</u>	
Demand Resources		<u>61,052,980.75</u>
Total		<u>\$77,431,683.54</u>
LIABILITIES		
Capital	\$ 5,000,000.00	
Surplus	5,000,000.00	
Undivided Profits	2,400,010.50	
Unearned Interest	82,717.31	
Reserved for Taxes, Interest, and Dividends	<u>1,311,177.75</u>	<u>\$13,793,905.56</u>
Demand Deposits	\$20,647,531.72	
Time Deposits	<u>42,990,246.26</u>	<u>63,637,777.98</u>
Total		<u>\$77,431,683.54</u>

ing of January 3. The officers of the Fairfax National Bank met January 1, 1922, and considered the advisability of assuming the deposit liabilities of the two banks. Its reputation was of sufficiently long standing to obviate the possibility of a loss of prestige by this purchase. A decision to purchase, if possible, was a foregone conclusion. Determination upon the type of bid was the principal topic for discussion. Two proposals were made: one, to purchase the assets of the banks; the other, to purchase the deposits. It was known that the Bradshaw National Bank had spent the preceding week in examining the assets of the Milton institutions for evaluation purposes. In the limited time allotted for a decision and for the formulation of a bid, such an appraisal was impossible for the Fairfax National Bank. It was possible, however, to make an estimate of the value of the assets.

The Fairfax National Bank had been built up through a succession of mergers but it had never purchased a weakened bank. The total resources of the Fairfax National Bank were \$326,000,000. It had 3,500 correspondent banks located in every section of the United States, but chiefly in the Middle West. The resources

STATEMENT OF THE CONDITION OF THE FAIRFAX STATE BANK
AT THE CLOSE OF BUSINESS, JANUARY 3, 1922

RESOURCES		
Time Loans		\$21,428,493.72
Demand Loans	\$16,435,330.13	
Bonds and Securities	19,609,324.00	
Due from Banks	28,453,210.34	
Cash	<u>3,819,680.33</u>	
Demand Resources		68,317,544.80
Total		<u>\$89,746,038.52</u>
LIABILITIES		
Capital	\$ 5,000,000.00	
Surplus	5,000,000.00	
Stockholders a/c Milton	1,084,631.42	
Undivided Profits	2,425,905.84	
Unearned Interest	82,850.17	
Reserved for Taxes, Interest, and Dividends	<u>1,209,029.06</u>	\$14,802,416.49
Demand Deposits	\$24,383,224.87	
Time Deposits	<u>50,560,397.16</u>	<u>74,943,622.03</u>
Total		<u>\$89,746,038.52</u>

of the Milton National Bank, which was the more important of the Milton organizations, were \$71,000,000. It had a substantial number of desirable commercial customers and, in addition, 1,500 correspondent banks located in five states. There was little doubt that the purchasing bank could retain most of these accounts.

The Fairfax National Bank Building also housed the Fairfax State Bank. It was controlled by the same management, but retained its separate identity because under state law it could transact business not allowed under the charter of the Fairfax National Bank. The organization of the Milton State Bank and that of the Fairfax State Bank were similar. Each had a savings department, which accepted time deposits, a commercial department, which granted small secured loans, a trust department, which acted as trustee for estates and corporations, and a bond department, which bought and sold investment securities. The savings department of the Milton State Bank constituted the major division of the business. The resources of the Fairfax State Bank

**DAILY STATEMENT OF THE CONDITION OF THE FAIRFAX
NATIONAL BANK AT THE CLOSE OF BUSINESS,
SATURDAY, DECEMBER 31, 1921**

RESOURCES	
Loans	
Bills Discounted	\$133,787,601.08
Demand Loans	78,943,185.63
Bonds, Securities, etc.	<u>22,202,802.22</u>
	<u>\$234,933,588.93</u>
Due from Banks	
New York	\$ 8,169,686.38
Other Banks	24,561,123.00
Cash	18,196,540.06
Balance Federal Reserve Bank	31,104,911.86
Due from U. S. Treasury	<u>2,500.00</u>
	<u>82,035,761.30</u>
Foreign	880,791.26
U. S. Bonds	6,476,250.61
Real Estate	32,945.00
Securities Bought under Agree- ment to Repurchase	
	<u>1,957,772.27</u>
Total	<u>\$326,316,109.37</u>
LIABILITIES	
Capital Stock	\$ 25,000,000.00
Surplus	15,000,000.00
Profit and Loss Account	1,744,450.91
Undivided Profits	\$ 4,088,407.62
Less Expenses and Taxes Paid	<u>2,304,682.79</u>
	<u>1,783,724.83</u>
Bills Payable	0.
Rediscounts	0.
Circulation	50,000.00
Deposits	
Individual	\$164,216,008.95
Banks	<u>118,521,924.68</u>
	<u>282,737,933.63</u>
Total	<u>\$326,316,109.37</u>

were \$77,500,000; those of the Milton State Bank were \$11,000,-000. In the latter institution, almost \$10,000,000 of these resources represented savings deposit liabilities to 38,000 customers. The interest rate on savings deposits was the same in both banks.

Since liquidation of the loans to industrial and agricultural borrowers of the Milton banks might cause failures, the clearing-house banks expected the bank which assumed the deposit liabil-

DAILY STATEMENT OF THE CONDITION OF THE FAIRFAX
NATIONAL BANK AT THE OPENING OF BUSINESS,
JANUARY 3, 1922

RESOURCES		
Loans		
Bills Discounted	\$180,455,343.89	
Demand Loans	78,943,185.63	
Bonds, Securities, etc.	<u>28,752,552.89</u>	\$288,151,082.41
Due from Banks		
New York	\$ 9,038,658.80	
Other Banks	30,157,739.11	
Cash	21,802,138.10	
Balance Federal Reserve Bank	36,428,609.26	
Due from U. S. Treasury	<u>2,500.00</u>	97,429,645.27
Foreign		905,580.85
U. S. Bonds		7,195,843.91
Real Estate		32,945.00
Securities Bought under Agree- ment to Repurchase		<u>1,957,772.27</u>
Total		<u>\$395,672,869.71</u>
LIABILITIES		
Capital Stock		\$ 25,000,000.00
Surplus		15,000,000.00
Profit and Loss Account		3,528,175.74
Undivided Profits	o.	
Less Expenses and Taxes Paid..	<u>o.</u>	
Bills Payable	<u>o.</u>	
Rediscounts	<u>\$ 13,283,460.94</u>	13,283,460.94
Circulation		50,000.00
Deposits		
Individual	\$199,345,094.79	
Banks	131,753,134.90	
Milton Stockholders	<u>7,713,003.34</u>	<u>338,811,233.03</u>
Total		<u>\$395,672,869.71</u>

ties of the Milton banks to follow a lenient renewal policy. Such procedure also was necessary to permit the purchasing bank to realize the maximum from the Milton assets. This meant that the assumption of deposit liabilities entailed prolonged liquidation. The clearing-house banks had agreed not to compete for these depositors with the institution which relieved the situation.

The difficulties of the Milton banks were attributed in part to

STATEMENT OF THE MILTON STATE BANK AT THE CLOSE
OF BUSINESS, DECEMBER 31, 1921

RESOURCES	
Time Loans	\$ 2,650,852.08
Demand Loans	2,049,818.18
Loans on Real Estate	1,045,537.21
Real Estate Bonds	1,376,321.20
Bonds and Securities	2,365,877.06
Other Real Estate	16,016.56
Overdrafts	171.44
Milton National Bank	379,592.84
Bickerstaff National Bank	110,545.06
Morley Trust Company	100,931.30
Cash on Hand	136,564.51
Checks for Clearance	95,912.39
Cash Items	32,321.14
Items in Transit	18,796.03
Demand Interest Account	9,802.61
Internal Revenue Stamps	100.00
War Saving Thrift Stamps	418.90
	<u>\$10,989,578.51</u>
LIABILITIES	
Capital	\$ 500,000.00
Surplus	250,000.00
Undivided Profits	273,868.31
Contingent Fund	50,000.00
Reserved for Interest and Taxes	72,431.31
Deposits, Individual	705,625.31
Deposits, Savings	7,447,240.80
Deposits, Savings Club	2,289.00
Deposits, Time Certificates	559,815.31
Deposits, Banks and Bankers	5,957.59
Deposits, City	75,000.00
Deposits, Trust Company	456,456.64
Deposits, Trust Department Special	66,851.49
Deposits, Bond Department	374,918.24
Deposits, R/E Loan Department	75,190.42
Cashier's Checks	40,066.30
Certified Checks	1,457.35
Expense Checks	6,228.45
Unclaimed Balances	472.81
Milton State Pension Fund	655.71
Suspense Account	4,928.11
Savings Plus Insurance Receipts	125.36
Dividends Unpaid	20,000.00
	<u>\$10,989,578.51</u>

STATEMENT OF THE CONDITION OF THE MILTON NATIONAL BANK
AT THE CLOSE OF BUSINESS, DECEMBER 31, 1921

RESOURCES	
Loans	\$46,667,742.81
Loans, Foreign Department	221,903.57
Overdrafts	87,454.37
Stock of Federal Reserve Bank	210,000.00
U. S. Bonds	88,160.00
U. S. Certificates of Indebtedness	5,000.00
Bonds to Secure Postal Savings Deposits	170,647.50
Other Bonds and Securities	3,168,008.15
Other Bonds to Secure War Loan Deposit	430,785.80
Other Bonds and Securities to Federal Reserve Bank as Excess Security for Loans	25,000.00
Cash and Accounts Receivable Due from Building	110,702.22
Interest Accrued and Paid in Advance	171,742.52
Transit Account—General	1,646,704.74
Banking House	3,000,000.00
Transit—Reserve	2,889,204.49
Transit—B/L	514,969.88
Transit—Duplicate	1,388.06
Transit—Federal Reserve Collection Account	11,759.04
Due from Banks	1,366,815.36
Cash Coupons	34,746.96
Cash Account	3,609,564.34
Due from Federal Reserve Bank	5,323,697.40
Revenue Stamps	1,098.82
Due from Foreign Banks	104,176.66
Customers' Liability a/c Acceptances	600,371.90
Customers' Liability a/c Letters of Credit and Travelers' Checks	655,171.22
	<hr/>
	\$71,116,815.81

inadequate collateral for its secured loans. The collateral, moreover, was insufficiently diversified and, in instances, of little-known corporations which made it difficult to market. In particular, the officers of the Milton banks had sponsored and invested in new industrials which at this time were in financial difficulties. Sales of securities of these industrials had been made to Milton customers, who had given the securities as collateral. It was possible that the assets of the Milton banks were not sufficient to equal eventually the deposit liabilities.

At the meeting of the representatives of the clearing-house banks it had been announced that a guarantee of \$2,500,000 was

**STATEMENT OF THE CONDITION OF THE MILTON NATIONAL BANK
AT THE CLOSE OF BUSINESS, DECEMBER 31, 1921**

LIABILITIES	
Capital	\$ 5,000,000.00
Surplus	2,000,000.00
Profit and Loss	394,418.66
Interest Collected but Not Earned	317,735.17
Depreciation on Canadian Exchange	218.74
Protest Fees	30.47
Telegrams	600.30
Rediscounts	13,283,460.94
Reserved for Taxes and Ground Rent, Insurance and Banking House	100,000.00
Milton Building Account	114,837.34
Dividends	100,082.00
Reserved for Taxes	135,364.26
Guarantee Account	88,561.28
Cashier's Checks	35,407.35
Cashier's Checks, Expense	267.50
Cashier's Checks, Foreign	11,101.63
Certificates of Deposit—Time	253,164.98
Certificates of Deposit—Demand	75,559.05
Certified Checks	322,898.06
Local Drafts	205,087.78
Local Drafts, Special	683,362.67
Margins	118,500.00
Inactive	47,588.05
Due to Banks	12,928,950.22
Due to Federal Reserve Bank, Fiscal Agent	311,454.36
Due to Individual Depositors	32,795,139.87
Pension Fund	3,334.52
Postal Savings Deposit	84,733.45
Sundries Account	28,784.06
Sundries, Foreign Dept.	268,552.18
Difference Account	3,572.00
Building Earnings and Reserves	110,702.22
Cash Letters of Credit and Travelers' Checks	29,228.63
Liability a/c Acceptances	608,946.85
Liability a/c Letters of Credit and Travelers' Checks	655,171.22
	<u>\$71,116,815.81</u>

to be placed at the disposal of the bank which purchased the two Milton institutions. There was an unconditional guarantee to meet any deficit between the value of the assets and the deposit liabilities up to the pledged amount. It had been announced, also,

that certain stockholders of the embarrassed banks had previously guaranteed \$1,000,000 for this purpose, in addition to the legal double liability for which they were responsible.

The condition of the assets of the Milton banks and the limited time in which to form a bid caused the directors of the Fairfax National Bank to decide not to present a bid based on an estimation of the value of the assets but to submit a bid for the deposits. The Fairfax banks were to assume immediate liability for the deposits and to pay a commission of 3% for all commercial deposits, computed on the basis of the average deposits during the last three months of 1922. Five per cent of all savings deposits was to be paid on the average deposits of the last five months of 1922. All the assets of the two Milton banks were eventually to be liquidated in order to provide payment to the Fairfax banks for their assumption of the deposit liability. The cash on hand and the amounts due from banks were to be applied immediately as partial payment. Payment of Milton stockholders and all liquidation procedure were to be carried out by the Milton banks under the absolute control and administration of the Fairfax banks. As soon as the assets of the Milton banks were liquidated and the loans paid up, their charters were to be given up; this would complete the amalgamation of the Milton and Fairfax institutions. Income from the investments and loans before the liquidation was to be credited to the Milton banks. The personnel of the Milton banks was to be taken into the Fairfax organizations. It was obvious that the 400 employees and officers would be required to transact the increased business of the Fairfax banks. There was no obligation, however, to retain any of them. Banking operations from the morning of January 2 were to be conducted solely from the Fairfax National Bank Building.

The Fairfax National Bank was successful in its bid.

In his annual report to the stockholders of the Fairfax National Bank, dated December 31, 1923, the chairman of the board of directors stated: "The liquidation of the Milton banks has progressed so well that the Fairfax banks have been paid in full for the liabilities of the Milton banks, amounting to approximately \$74,000,000, which we assumed when we took over this business. On January 3, 1924, the guarantee fund put up by the clearing-house banks will be returned to them with interest, and

our contract then will have been completed most successfully. The Milton banks will still have considerable assets which, when liquidated, will insure a substantial return to their stockholders."

9. INTERCONTINENTAL TRADING COMPANY—ESTABLISHMENT OF A FOREIGN TRADE POLICY BY A NEWLY FORMED COMPANY WHICH PURCHASED THE ASSETS OF A BANKRUPT EXPORT AND IMPORT CORPORATION

In December, 1921, the Intercontinental Trading Company was incorporated to purchase the assets of the Interoceanic Export Company which was operated by a receiver. The increase in demand for products from the United States caused by the World War resulted in a rapid expansion in the latter company's volume of orders from 1914 to 1919. During the depression period which followed, the company was declared bankrupt. When the assets were purchased by the Intercontinental Trading Company it was necessary for the officers to establish a policy for resuming foreign-trade activities.

The Interoceanic Export Company was incorporated in 1914 with a capital of \$1,000. It acted as selling agent for manufacturers in the United States who produced automobiles, trucks, and automotive supplies which were exported for a commission to England. By 1916 the capitalization was \$1,000,000, and in that year it was increased to \$12,000,000. Subsidiary selling companies were organized in 20 foreign countries; the capital for these was supplied by the parent corporation. They became export agents for various products made in the United States and in addition engaged in import trade. Although the company originally had specialized in automobiles, trucks, and automotive supplies, the increasing demand for commodities from the United States resulted in an increase in the number of products exported and an increase in the company's trade. At first the sale of the additional lines was usually made on letters of credit. With the increase in volume of sales liberal credit was extended. Merchandise was bought before contracts for its sale had been made. Activities of the company were extended beyond exporting and importing. For example, a steamship company was purchased and incorporated as a subsidiary, and, in addition to the export of tobacco, the company engaged in the manufacture of cigarettes.

In 1918, the total volume of sales was \$55,000,000—75% of which was export trade.

In October, 1919, the officers of the Interoceanic Export Company realized the consequences which might result from its over-extended condition. There was in stock merchandise valued at \$5,000,000 which had not been sold, and, in addition, merchandise had been purchased for \$4,750,000 to fill orders but had not been delivered. The officers attempted to enforce a policy of retrenchment. They endeavored to reduce domestic stocks and advised foreign selling companies to decrease inventories. Further commitments for merchandise were not to be allowed unless orders from customers had been received. Additional sales were to be made only on letters of credit. These recommendations were not followed completely by the subordinate operating officials, and since the prospect for profits was still encouraging, no measures for the enforcement of the policy were adopted.

Early in 1920, commodity prices and foreign exchange rates began to decline. The company became heavily in debt. A total of \$12,000,000 was owed to banks and merchandise creditors. The entire capital of \$12,000,000 was invested in foreign selling companies, and working capital, except for accumulated earnings, was furnished by outside creditors. Operations had been extended to the principal countries of the world. During this rapid expansion, it had been difficult to secure experienced and capable personnel, and junior executive positions had been filled by men without adequate ability.

During March and April, 1920, a concerted effort to liquidate was inaugurated. Executive positions were filled by newly appointed officials to assist in this policy. Demand for commodities declined to such an extent that disposition of domestic stocks of merchandise was difficult, although the losses involved were disregarded. Foreign subsidiary selling companies were liquidated at a fraction of the originally invested capital. Many foreign buyers refused to accept merchandise that had been shipped on their orders. In Japan, for instance, there was a stock of textiles valued at \$500,000, and, although orders from customers had been received for it, they refused to accept delivery. The stock was liquidated at 25% of its original selling price. Similarly, merchandise had been shipped to South America, and buyers refused to accept drafts for payment. Concessions in price were

made to secure acceptance from original purchasers, or local agents were given charge of the sale of the merchandise. During the remainder of 1920 further efforts were made to liquidate the assets of the corporation. The company's building in New York City was sold for \$2,000,000.

In March, 1921, the company was unable to make a payment of \$1,000,000 due on a serial note issue. Bankruptcy proceedings were instituted and a receiver was appointed. The receiver confined his efforts to liquidation of the company's assets. In South America, for example, \$500,000 was owed to the company on account from customers, the major portion of which was a year or more overdue. There was also an investment of \$500,000 in the subsidiary selling company which had been organized there. Similar conditions existed in other foreign countries.

The assets of the company were sold in December, 1921, to the Intercontinental Trading Company, which was incorporated for this purpose. It paid a specific sum and agreed to return 50% of the amount of claims collected in excess of their purchase price. Half the activities of the new corporation were directed toward settlement of claims and liquidation of frozen assets abroad. In the spring of 1922, the officers were confronted with the problem of determining what kind of foreign-trade activities should be resumed.

It was recommended that the export business be neglected and that the company fill only those foreign orders under letters of credit which were received from former customers, and that the principal emphasis be placed on development of imports. To engage actively in the export trade required the establishment of foreign branches or sales agents, to replace those discontinued. Extensive export operations, the officers believed, could be carried on successfully only by extension of credit to foreign buyers. Competition with foreign manufacturers in their own markets was difficult to overcome because of the depreciated currencies. It was necessary to secure agencies from domestic manufacturers to export the majority of manufactured products for which a demand existed. Former connections with manufacturers had been severed, and the agencies had been granted to other export companies. Most of such commodities as wheat and cotton were exported on a narrow margin of profit by specialists.

The name of the Interoceanic Export Company, on the other

hand, was well known in foreign countries. As successor to a company which had been pre-eminent in foreign trade, the Intercontinental Trading Company had prestige among foreign buyers and could secure former customers. It was possible also to re-establish foreign selling connections with the men who had acted as agents or as officials of the subsidiary companies. Since the company had taken over the operating force of the former corporation with the exception of the higher executives, it had knowledge of important foreign markets and experience in the commercial practices of the various countries. The export trade of the company might be resumed if sufficient efforts were directed toward that end. The establishment of foreign connections, moreover, placed the company in a favorable position to profit as fully as competitors from whatever improvement might develop in the export trade. Neglect of exports allowed competitors to become entrenched so firmly that subsequent development of export trade was rendered more difficult. The officers were unwilling to take the credit risks involved in exporting and to invest the necessary capital in establishing branches. Although the advantages of increased volume of sales from export trade might be sacrificed, they decided to confine efforts to importing. Organizations in foreign countries were not necessary for this trade, since all transactions abroad could be performed either by a single purchasing agent in each country or by communication with the foreign seller from the home office. An enlarged sales force in this country was not required because buyers customarily came to New York to place orders and other customers could be quoted prices by mail. Low rates of exchange served to benefit the importer. Credit risk was reduced materially, since sales were made in this country where specific credit information was available and where a close supervision of collections could be exercised. The credit risk incurred was similar to that of a domestic wholesaler; in exporting, the credit risk was of the same nature, except that the foreign customer was farther removed and adequate information concerning his financial responsibility was meagre and more difficult to secure. His ability to pay, also, was affected by political and economic disturbances over which he had no control.

The majority of the company's imports to the United States were to come from South America, and the most important commodities for which a ready market existed were hides, beeswax,

and crude drugs. Merchandise usually was to be purchased after orders for it had been received, and the company would charge a commission for its work. Though no emphasis was placed on export trade, the company was willing to execute those orders received which exceeded \$500 in amount. These came principally from customers of the former company. Exports were expected to constitute only 25% of the total volume.

B. COMMERCIAL BANKING AND THE BUSINESS CYCLE

10. NEW ENGLAND COMMERCIAL NATIONAL BANK—GRANT OF CREDIT DESPITE UNFAVORABLE CURRENT POSITION

The policy of the New England Commercial National Bank was to readjust its lines of credit to customers once a year unless a decided change in the financial condition of a company came to its attention. If a company maintained its relative position in an industry, a line of credit ordinarily was not reduced suddenly, although under adverse business conditions the bank often advised customers to conserve their assets. No legal obligation to extend credit existed, but the bank, in common with its competitors, accommodated its customers whenever possible in order to retain their deposits. The cashier of the New England Commercial National Bank had read an article on the advisability of an improving current ratio of assets to liabilities in a period of prosperity, with which he agreed in theory.¹ He cited, however, three loans made in October, 1923,

¹"Bank Management and the Business Cycle," by Professor O. M. W. Sprague, *Harvard Business Review*, vol. 1, p. 19, advanced an argument on the subject of unsecured bank loans, which may be summarized as follows:

An overexpansion of industry is brought about by increased costs and prices. Although profits during the period of activity are retained in a business, the requirement for funds to make purchases is greater proportionately than the increase in capital, because of high interest rates and high prices. Bank loans, furthermore, are used where long-term financing should be effected. Credit, which is demanded to finance the customary volume of sales, is used to excess and prices are increased still more. Inflation decreases the realizable value of assets in that they are subject to greater price declines. Commercial banks are under obligations to extend credit to solvent depositors and, also, to deny credit to companies when it is detrimental to applicants' interests to secure it. No check from outside can be placed on excessive borrowings early enough, because the Federal Reserve System cannot have a real influence until borrowings from it are extensive, and this situation does not occur until the period of activity is well advanced. To create an inside check is difficult, since a bank hesitates to refuse credit which, although it would be detrimental, appears justified because of the danger of the loss of customers. In the past, banks did not require statements, and those who asked for them lost custom-

to companies whose statements showed current ratios which were declining or were less than that ordinarily required.

The Bridgeman Dry-Goods Company, which bought and sold all kinds of staple cotton goods, had been organized, in 1922, by a former salesman of an established wholesale dry-goods company in the vicinity. Purchases were made from mills or commission merchants, and sales, to dry-goods and department stores. The proprietor, with a capital of \$18,000, had secured sales of \$225,000 during the fiscal year ending October 31, 1923. The balance sheet as of that date follows:

**BRIDGEMAN DRY-GOODS COMPANY—BALANCE SHEET
AS OF OCTOBER 31, 1923**

ASSETS	LIABILITIES	
Cash	\$ 900 Accounts Payable	\$27,200
Accounts Receivable... 23,200	Accrued Items	500
Merchandise (at cost) .. 19,100	Quick Liabilities	\$27,700
Quick Assets	Capital	18,000
Equipment 200	Surplus	700
Prepaid Expenses 2,700		
Organization Expenses.. 300		
Total \$46,400	Total	\$46,400
Current ratio 1.6 to 1		

A "2 to 1" ratio usually was required of wholesale dry-goods merchants. Since the proprietor of the company, however, was an honest and capable man, the cashier decided to extend a line of credit of \$3,000 to enable the company to take cash discounts on its purchases.

The Security Clothing Store, which had been established for four years, sold men's trade-marked clothing of standard styles. It occupied the second floor of a building in the center of the business district and employed six salesmen; 75% of its merchandise was sold for cash. The owner of all the capital stock had been accustomed to borrow about \$10,000 at the two seasons of the year when the purchases were the heaviest, and, at other times. The practice, nevertheless, has increased and has become general at least among city banks. In like manner, a movement may be established to require an improving current ratio in order to allow for unusual losses from inflated inventories and receivables.

times, smaller sums to enable him to buy job lots and stocks of merchandise which were being sold for cash by bankrupt corporations. He had arranged annually to pay off his bank borrowings entirely. Usually after such liquidation no loans were requested for three months. The balance sheets of the company at designated dates from 1920 to 1923 are shown below.

THE SECURITY CLOTHING STORE—COMPARATIVE BALANCE SHEETS, 1920-1923
(*In thousands of dollars*)

ASSETS	Sept. 1, '20	July 1, '21	Feb. 28, '22	Feb. 28, '23	Sept. 30, '23
Cash	2	5	4	3	4
Accounts Receivable..	5	6	6	7	11
Merchandise*	31	22	22	27	36
Government Securities.	0	0	0	1	2
Quick Assets	38	33	32	38	53
Equipment	1	1	1	1	2
Good-Will	0	41	41	41	41
Miscellaneous	0	1	3	0	1
Total	39	76	77	80	97
LIABILITIES	Sept. 1, '20	July 1, '21	Feb. 28, '22	Feb. 28, '23	Sept. 30, '23
Accounts Payable....	8	9	8	8	21
Miscellaneous	0	2	0	0	0
Quick Liabilities ...	8	11	8	8	21
Capital	31	63	63	63	63
Surplus	0	2	6	9	13
Total	39	76	77	80	97
Net Worth	31	24	28	31	35
Current ratio.....	4.7 to 1	3.01 to 1	4.0 to 1	4.7 to 1	2.5 to 1

* Valued at cost or market, whichever was lower.

In September, 1923, in preparation for fall sales, the company had an inventory of merchandise and a total of accounts payable larger than at other seasons of the year. Funds had not been borrowed from banks, since the proprietor deemed it preferable to hold his lines of credit in reserve, in order to enable him to take advantage of any favorable opportunities to purchase merchandise. He desired, however, an increase in his line of credit from \$10,000 to \$15,000. In spite of the declining current ratio, the cashier decided that, since the sales of the company had been increasing steadily, from \$71,000 in 1921 to

\$104,000 in 1922, and to \$145,000 in 1923, and since profits had been made each year, he was justified in extending the additional credit.

The Lunt Knitting Mills owned a modern plant without encumbrance in which it produced women's and children's underwear. The financial affairs of the company were in charge of an able business man. The sales of the company during 1922 had amounted to \$626,000, and profits were \$64,000. Accounts payable were paid promptly; the receivables from the wholesalers to which sales were made were almost all "quick." At two other banks, the Lunt Knitting Mills had lines of credit of \$55,000 each; it used these lines almost continuously to finance its purchases. Since the stockholders' interests amounted to about \$145,000, bank loans of \$110,000 were unusually large in relation to net worth. The balance sheets of Lunt Knitting Mills for January, April, and July, 1923, are shown below.

LUNT KNITTING MILLS—COMPARATIVE BALANCE SHEETS
(In thousands of dollars)

ASSETS	Jan. 1, 1923	April 1, 1923	July 1, 1923
Cash	18	21	30
Accounts Receivable	48	54	60
Merchandise	104	130	146
Quick Assets	170	205	236
Machinery	122	125	130
Total	292	330	366
LIABILITIES	Jan. 1, 1923	April 1, 1923	July 1, 1923
Notes Payable	93	104	108
Accounts Payable	6	29	59
Reserves for Taxes	7	7	..
Quick Liabilities	106	140	167
Reserves	49	43	52
Capital Stock	85	85	85
Surplus	52	62	62
Total	292	330	366
Current ratio	1.6 to 1	1.5 to 1	1.4 to 1

The treasurer of the Lunt Knitting Mills requested that the New England Commercial National Bank extend a line of credit

of \$55,000. He promised that at no time would borrowings be made from more than two of the three banks, and that the accounts would be rotated. He stated also that average balances of \$11,000 would be maintained in each of the banks. Since the knitting mill was without encumbrance, and since it was sufficiently standard to be readily salable, the loss, if a forced sale were necessary, probably would not exceed the investment of the stockholders. The company, furthermore, had made profits during 1922, and expected to add substantially to its surplus in 1923. On the other hand, the excess of quick assets over quick liabilities was not as large as the bank ordinarily demanded from companies in this industry. Since the company did not expect to be in a position to pay off all its notes payable within two years, any loans would be in a sense "frozen."

Because of the confidence of the cashier in the treasurer of the Lunt Knitting Mills, however, it was determined to grant the line of credit requested, provided the company agreed to rotate its borrowings and maintain an average balance of 20%.

II. PEOPLES BANK AND TRUST COMPANY—INVESTMENT OF SURPLUS FUNDS FOLLOWING PERIOD OF LIQUIDATION

The management of the Peoples Bank and Trust Company of New York City always had been conservative. Minor losses only were taken in 1920 and in the first nine months of 1921. At the same time, every customer of the bank who had required funds had been accommodated to the limit of his line of credit. On October 14, 1921, the bank was capitalized at \$15,000,000 and had a surplus of \$21,000,000; deposits aggregated \$204,000,000, and loans amounted to \$162,000,000. For a short period prior to that date, the volume of loans had declined more rapidly than deposits, but the cashier estimated that liquid funds were adequate to provide for customers' demands for the ensuing six months or longer. Loans constituted 60% and investments 10% of the total assets; the proportion of time and call loans was satisfactory. In addition to the funds invested, the bank had approximately \$5,000,000 with which the vice-president, in charge of investments, desired to purchase earning assets.

Six different classes could be secured, namely: call loans, open market notes or acceptances, liberty bonds, railroad bonds,

United States certificates of indebtedness, and bonds of public utilities and industries companies. The following tabulation gives the prevailing rates for paper in the New York money market on October 13, 1921:

Call money.....	6% high, low, and renewal
Time money 60-90 days.....	5½%
Time money 4-6 months.....	5½ at 5¾%
Commercial paper 60 and 90 days indorsed and 6 months' choice names.....	5½ at 5¾%
For names less well known.....	6%
Prime eligible bankers' acceptances 30 to 120 days.....	4½ at 4½%
New York Reserve Bank discount rate.....	5% on all paper

The following tables are indicative of the prices at which other types of securities could be purchased:

TABLE 9—UNITED STATES GOVERNMENT BONDS

Issue	October 13	Approximate Yield
Liberty 3½s, 1932-47	89.90	4.81
1st Con. 4s, 1932-47.....	93.00	4.94
2nd 4s, 1927-42.....	92.10	5.71
1st Con. 4½s, 1932-47.....	92.80	5.22
1st, 2nd 4½s, 1932-47.....	98.00	4.51
2nd Con. 4½s, 1927-42.....	92.30	5.88
3rd 4½s, 1928.....	94.50	5.28
4th 4½s, 1933-38.....	92.80	5.17
Victory 3¾s, 1922-23	99.32	4.45
4¾s, 1922-23	99.36	5.42

TABLE 10—RAILROAD BONDS

Issue	October 13	Approximate Yield
Ann Arbor Gold 4s of 1995.....	53	7.6
Atchison 4s of 1995.....	79	5.4
Baltimore & Ohio Prior Lien 3½s of 1925	88½	7.1
Chicago & Alton ref. 3s of 1949.....	47	7.6
Kansas City Southern 1st 3s of 1950.....	59	6.0
M. K. & T. 1st 4s of 1990.....	66	6.1
Morris & Essex 1st 3½s of 2000.....	68½	5.1
N. C. & St. L. 5s of 1928.....	93½	6.2
Northern Pacific 4s of 1997.....	77½	5.5
Union Pacific 1st 4s of 1947.....	82¾	5.5
West Shore 4s of 2361.....	74½	5.4

TABLE 11—UNITED STATES CERTIFICATES OF INDEBTEDNESS

Maturity	Interest Rate	October 13	Approximate Yield
12/15/21.....	6 %	100 1/4	4.00
2/16/22.....	5 1/2 %	100 1/4	4.38
3/15/22.....	5 1/4 %	100 3/4	4.25
3/15/22.....	5 3/4 %	100 1/2	4.25
6/15/22.....	5 1/2 %	100 1/2	4.53
8/ 1/22.....	5 1/2 %	100 1/2	4.67
6/15/24.....	5 3/4 %	100 1/2	4.85
3/15/22.....	5 %	100 1/4	4.25
9/15/22.....	5 1/2 %	100 1/2	4.80
9/15/24.....	5 1/2 %	101	5.10

TABLE 12—UTILITIES AND INDUSTRIALS

Issue	October 13	Approximate Yield
American Tel. and Tel. 6s of 1924.....	98 1/2	6.5
American Tel. and Tel. Trust 5s of 1946	88 1/2	5.9
American Tobacco 7s of 1923.....	101 1/2	5.9
Bethlehem Steel 1st Ext. 5s of 1926.....	92 1/2	6.9
Central Leather 5s of 1925.....	90	8.2
Colorado F. & I. 5s of 1943.....	79 1/2	6.8
Duquesne Light 6s of 1946.....	96 1/2	6.3
Montana Power 5s of 1943.....	87 1/2	6.0
New York Gas & Electric 1st 5s of 1948.	89	5.8
Peoples G. L. & C. Co. 1st 6s of 1943....	94	6.5
Standard Oil Deb. 7s of 1931.....	105	6.3
United States Steel 5s of 1963.....	95	5.3

How should the Peoples Bank and Trust Company have invested its surplus funds?

I2. EARLSTON SAVINGS BANK—INVESTMENT IN UNITED STATES GOVERNMENT BONDS IN 1922

The Earlston Savings Bank was one of the oldest and most conservative savings banks in a Massachusetts city. The large surplus which it had built up in its 60 years of operation attested the success of its investment policies. The investment practice had been to invest its funds in bonds permitted by law, which combined maximum security of principal with highest yield for their type and to hold them until maturity. A portion of the

funds was invested in real estate mortgages in Massachusetts. The highest grade of mortgages had been extremely successful in the bank's investments, but only a small quantity of them could be secured which were of the desired quality. It was necessary also, of course, for the bank to invest a portion of its funds in short term notes and commercial paper, in order to maintain a sufficiently liquid condition. The investment of the bulk of the bank's funds in bonds was rendered difficult by the fact that there was not a large list of investments from which savings banks could choose. Hence it was necessary, usually, for the bank to take what was offered. In purchasing bonds, the bank did not consider their length of life in relation to changes in interest rates, but only in relation to the maturity dates of other invested funds. The result of this policy had been that many long term bonds, purchased about 1900 when interest rates were low, were selling in 1923 at a diminished price. Many of these securities still had 50 or 100 years to run and, if held to maturity, payment of principal was assured; but during the intervening period, if it were necessary to sell any part of them, loss of principal in the bank's funds might result.

In 1922, the Earlston Savings Bank had about \$300,000 in bonds mature which it was necessary to reinvest. The United States Treasury in October, 1922, had issued 30-year bonds, which were selling to yield 4.25%. The treasurer of the bank was undecided whether to invest the \$300,000 in United States Treasury 30-year bonds, yielding 4.25%, or in other issues, available at that time. The bonds of the United States Government, of Massachusetts, and of counties and municipalities in that state, were not taxable. All other bonds were subjected to a state tax of $\frac{1}{2}$ of 1% per year. In considering, therefore, the relative merits of these bonds, $\frac{1}{2}$ of 1% was added to the yield of the tax-free securities.

The Massachusetts state laws restricted the field of savings bank investments to the following types: bonds or notes of the United States Government; Massachusetts state and municipal bonds; bonds of several other states and municipalities, approved by the state bank commissioner; first mortgage bonds of approved railroads; first mortgage bonds of real estate in Massachusetts; and commercial paper and short time notes of local companies, approved by the bank commissioner. The treasurer

TABLE 13—TYPICAL LIST OF INVESTMENTS OFFERED
TO SAVINGS BANKS IN 1922

Amount of Bonds Offered	Bonds Non-taxable	Interest Rate	Maturity	Yield
12,000	Boston, Mass.....	4 %	1960	3.80
12,000	Commonwealth of Mass....	4½ %	1943-54	3.80
10,000	Medford, Mass.....	4½ %	1925	3.90
10,000	Medford, Mass.....	4½ %	1927	3.90
20,000	Medford, Mass.....	4½ %	1930	3.85
20,000	Medford, Mass.....	4½ %	1934	3.85
15,000	Medford, Mass.....	4½ %	1936	3.85
18,000	Malden, Mass.....	4½ %	1926	3.90
11,000	Malden, Mass.....	4½ %	1927	3.90
18,000	Malden, Mass.....	4½ %	1928	3.90
18,000	Malden, Mass.....	4½ %	1930	3.85
13,000	Malden, Mass.....	4½ %	1931	3.85
24,000	Milford, Mass.....	4½ %	1941-52	3.85
50,000	Other miscellaneous cities in Massachusetts.....	...	1925-60	3.75-3.90
23,000	Commonwealth of Mass....	3%	1941	3.95

Amount of Bonds Offered	Subject to $\frac{1}{2}$ of 1% Tax	Interest Rate	Maturity	Yield
26,000	California	4½ %	1949	4.10
100,000	California	4½ %	1950	4.10
18,000	City of Baltimore.....	5%	1930	4.10
100,000	City of Baltimore.....	5%	1931	4.10
100,000	City of Baltimore.....	5%	1932	4.10
100,000	City of Baltimore.....	5%	1933	4.10
12,000	City of Cleveland.....	5%	1934	4.15
50,000	Columbus, Ohio.....	5%	1931	4.20
10,000	St. Paul, Minnesota.....	5½ %	1951	4.20
14,000	Detroit	5%	1937	4.25
10,000	Hammond, Indiana.....	6%	1936	4.50
10,000	Hammond, Indiana.....	6%	1937	4.50
10,000	Hammond, Indiana.....	6%	1938	4.50
10,000	Hammond, Indiana.....	6%	1939	4.50
25,000	Boston & Albany R.R.....	5%	1942	4.70
16,000	Northern Pacific R.R. (Refund. and Improvement).	5%	2047	5.02
25,000	N. Y. Central & Hudson R.R. (Refund. and Im- provement)	5%	2013	5.02
50,000	New England Tel. & Tel. (First Mortgage)	5%	1952	5.00

of the bank studied carefully the list of investments offered to savings banks by local investment banking firms. The list given in Table 13 is typical in description, amount offered, maturity, and yield of the securities available at that time from offerings of investment bankers.

The treasurer also examined bonds (eligible for savings banks) that were listed on the New York Stock Exchange. The following railroad bonds, among others, were available from the issues regularly quoted on the New York Stock Exchange.

TABLE 14—BONDS ELIGIBLE FOR SAVINGS BANKS LISTED ON THE NEW YORK STOCK EXCHANGE IN 1922

Bonds	Interest Rate	Maturity	Yield
Atchison, Topeka & Santa Fe Railway, General Mortgage.....	4%	1995	4.50
Atchison, Topeka & Santa Fe Railway, East Oklahoma First Mortgage.....	4%	1928	5.15
Atlantic Coast Line Railroad, First Consolidated	4%	1952	4.66
Chicago & Northwestern Railway,* Sinking Fund Mortgage.....	5%	1929	5.20
Chicago & Northwestern Railway,* Sinking Fund Mortgage.....	6%	1929	5.20
Norfolk & Western Railway, General Mortgage	6%	1931	4.95

* These bonds were not active and probably only a small number of them could be purchased without forcing up the price.

In comparing the relative merits of the United States bonds and of those offered by the investment banking firms and those listed on the Stock Exchange, it was apparent that none of the state or municipal bonds yielded as much as the United States 1952 treasury bonds, when allowance was made for the tax-free provisions. Because the high income tax and surtax on the income of individuals did not apply to municipal and state bonds, the demand for these was so great that their yield was small. The result was that savings banks could not afford to invest in most municipal and state bonds. Only a few of the railroad bonds yielded more than the treasury bonds, allowing for the tax, and, while the principal of these bonds was probably secure, they were not comparable in security to government bonds. A further objection to purchasing any of the miscellaneous bonds was that

only a few of each type were available, while the government bonds could be purchased in one block. The problem of the savings bank was different from that of an individual investor: the former did not desire to purchase one or two bonds of each of many issues.

These factors indicated that the United States 1952 treasury bonds were the most satisfactory for investment by the Earlston Savings Bank. In making his decision, the treasurer did not take into consideration the fact that the long time trend in interest rates might be upward during the life of these bonds, and that the bank, therefore, might repeat its experience in losing principal on long term bonds prior to maturity. He maintained that it was impossible to forecast the long time trend of interest rates. He further stated that it was not the policy of the bank to speculate and that it should hold these bonds to maturity, whether or not they showed a profit or loss prior to that time.

A suggestion was made to the treasurer that the purchase of long term bonds, even if held to maturity, was a speculation. No loss in principal might result, but a loss in income was possible should the long time trend of interest rates continue upward. It was impossible under such circumstances to avoid either a loss in principal or a loss in income. It was further suggested, therefore, that the treasurer should invest in bonds of short maturity. The treasurer was of the opinion that it might be possible to forecast changes in interest rates for short periods of time, but he stated that he was unable to do this. He realized that the existing interest rates were low, compared with the rates of a few years previous and might be expected to rise. He was opposed, however, to purchasing short maturity bonds with the expectation that the funds could be reinvested in a long term issue under more favorable circumstances. The problem of investment became too complicated when short maturity bonds were purchased in larger quantities than the amount necessary to keep a portion of the bank's funds in liquid condition. Furthermore, the treasurer stated that if the \$300,000 were placed in short time issues and the long time trend of interest rates was downward, the bank would fail to make the profit which was certain to accrue from owning the long term treasury bonds. Moreover, since no short maturity bonds which gave the same security and yield as the 1952 United States treasury bonds were available in suffi-

cient quantity, purchase of short term bonds necessitated an immediate sacrifice in income in anticipation of possibly increased income and a probable slight capital gain. For this reason, the treasurer of the bank decided, in October, 1922, to invest the \$300,000 in United States treasury bonds due in 1952.

In September, 1923, the treasurer of the Earlston Savings Bank was of the opinion that his decision had been justified. The bond market, as a whole, was considerably lower than it had been in October, 1922, but the treasury bonds of 1952 continued to sell on the open market to yield 4.25%.

13. BENDER TRUST COMPANY—RETENTION OF ESTABLISHED POLICY TO PURCHASE COMMERCIAL PAPER

The Bender Trust Company, which was located in an eastern city of over 1,000,000 people, had about 6,000 depositors. It conducted a commercial banking business, acted as trustee and as executor, and was the fiscal agent for a number of corporations. Its commercial deposits averaged about \$20,000,000, and the profits from its commercial business were 20 times those from its trust department.

It had been the policy of the investing officer to place funds not required immediately in commercial paper, except when the prevailing rates on short term bonds of equivalent security were higher than those on paper which matured in six months or less. The motive, however, never had been to derive a profit from appreciation in bond values. In September, 1923, it appeared to several of the directors that, although the current rate on commercial paper was higher than that on equally good bonds, there was a prospect that money rates would fall and that capital gains could be secured if funds were invested in bonds. Consequently these men endeavored to convince the officer of the advisability of making an exception to the established practice.

Before the Federal Reserve System was established, the Bender Trust Company had used the New York quick call money market on which to lend money in order to assure itself of liquid funds to meet fluctuations of loans and deposits. Loans on call had been maintained at such a figure that any reasonable sudden demand for funds could be supplied at a day's notice. With the establishment of the Federal Reserve System, of which the Ben-

der Trust Company became a member, the importance of the New York call money market to the bank was reduced. Except under unusual circumstances when call rates were particularly favorable, the money market was utilized exclusively for funds on hand for a few days only; for example, when a corporation made a large deposit on which dividend checks were to be presented within a few days, the money was loaned at quick call in New York.

Bankers' acceptances were deemed suitable for the Bender Trust Company only when the rate on them was higher than that on call loans. These acceptances did not replace commercial paper as they did in some smaller banks with less opportunity to obtain credit information, because ordinarily they yielded about 1% less.

Since 1917, commercial paper had served as a semi-liquid reserve for the Bender Trust Company. It could be rediscounted at the Federal Reserve Bank without delay; consequently, possession of an adequate supply insured the bank against contingencies. When funds were available in excess of its customers' requirements, it was the policy of the Bender Trust Company to purchase on the open market commercial paper maturing in convenient amounts from month to month. In this way, funds were provided for protection in the event of an increase in the demand for loans from customers or a sudden decrease in deposits without a corresponding decline in the demand for loans. The bank was under no obligation to renew paper purchased on the open market; whereas, if a customer desired the renewal of a loan, the bank had to accommodate him if his condition was satisfactory or run the risk of the loss of a depositor.

The bank also purchased short term bonds when their interest rates were higher than those on commercial paper and when it had a reasonable expectation of holding them to maturity. In order to avoid the risk of loss in principal due to fluctuations in interest rates, the maturities purchased rarely exceeded three years. The investing officer of the bank maintained that investments should be made not on the basis of what future interest rates were expected to be, but rather on the basis of those prevailing. Investments of this sort he considered secondary reserves, because, even under pressure, short term bonds could be sold without great loss, since they fluctuated relatively little in

value. The investing officer affirmed, furthermore, that a bank should not speculate on the future of the money market and, hence, should not borrow from the Federal Reserve Bank in order to take advantage of differences between the open market and Federal Reserve rates.

On June 30, 1920, there were outstanding on the books of the Bender Trust Company, \$23,000,000 of loans. The bank had borrowed on commercial paper and on its own notes slightly over \$4,000,000 from the Federal Reserve Bank. Investments, which had amounted to \$5,000,000 the preceding year, had been liquidated until the holdings consisted of about \$2,000,000 of short term bonds and notes. Between July, 1920, and March, 1921, customers' borrowings declined \$4,000,000. Although bond prices fell steadily during this period, and investment in long term securities would have permitted capital gains, the Bender Trust Company adopted the policy of repaying its borrowings at the Federal Reserve Bank before increasing its investments. As the loans were paid off, excess funds were invested in commercial paper, which at that time bore from 6% to 8% interest, rather than in bonds on which the interest rate was about 5 $\frac{3}{4}$ %. The purchase of bonds, even of short term, at this time would have permitted the bank to realize a higher return over the next two years than was obtainable by the repeated purchase of commercial paper. The investing officer, however, was of the opinion that the capital gain which might accrue was too small to warrant investment in bonds when the current interest rate for commercial paper was from 1% to 2% higher; he objected to investing in long term bonds for fear that the purchase price might not be realized if it became necessary to sell them.

In September, 1921, deposits increased slightly without a corresponding increase in the demand for loans. Unsecured time loans had declined from \$12,300,000 to \$10,500,000, while deposits averaged around \$21,000,000. At this time both commercial paper rates and rates on bonds of suitable maturity and security approximated 5 $\frac{3}{4}$ %. Consequently, when bonds were offered on which the rate of return appeared higher than on commercial paper, the bank purchased them, and by June 30, 1922, increased its holdings to \$4,800,000. During this period also, it purchased \$1,000,000 of Liberty bonds which it did not plan to hold until maturity. It was deemed to be consistent with the policy of the

bank to make this investment, since money could be borrowed on government issues at the Federal Reserve Bank and the bonds need not be liquidated hurriedly at a loss. They were sold in the fall of 1922 and in the spring of 1923 at a slight profit.

In the summer and fall of 1922, deposits of the Bender Trust Company decreased from \$21,000,000 to less than \$19,000,000 without a corresponding decrease in the demand for money from its customers. To provide funds to meet the resulting deficit in clearing-house balances, it was necessary to liquidate a portion of the investments. Money from maturing securities was not reinvested, and enough issues were sold during the remainder of 1922 and the first six months of 1923 to reduce the total holdings of bonds to less than \$2,000,000. The yield on these investments was slightly in excess of that which could have been secured by repeated purchases of commercial paper.

Deposits continued to decline during 1923 and the demand for loans was somewhat weaker than during the preceding year. In the meanwhile, the rate on commercial paper rose to $5\frac{1}{4}\%$ @ $5\frac{1}{2}\%$ while suitable bonds bore $4\frac{1}{2}\%$ @ 5%. Several of the bank directors maintained that money rates for commercial paper were as high as they would be for a year or more and that declines were probable. Consequently, they asserted that an exception to the established practice was warranted and desired the investing officer of the bank to place a portion of the excess funds in short term bonds so as to take advantage of the existing rate on securities of that type. The investing officer, however, saw no reason to deviate from the policy of investing excess funds in that form of security which currently bore the higher rate of interest. He stated that the bank was in a position to avoid losses if the customary policy were followed and that the gains which could be derived from a contrary policy were not sufficient to warrant an exception. Consequently he decided to invest about \$5,000,000, which represented the money not required by customers, in commercial paper maturing during the next six months, and not to buy short term bonds unless lots could be secured with an interest rate higher than that which suitable commercial paper offered.¹

¹ Selected items of the Federal Reserve Statements showing the changes in the investment holdings of the reporting member banks are discussed in *Letters*, vol. 1, p. 237; vol. 2, p. 5.

14. FARMERS' EXCHANGE BANK—THE PURCHASE OF COMMERCIAL PAPER IN 1919

On November 1, 1919, the Farmers' Exchange Bank, located in a middle-western city of 150,000, had deposits of about \$5,000,000. The assets against which they constituted a claim were divided as follows:

Cash, including checks in process of collection.....	15%
Commercial Paper, maturing within 6 months.....	30%
Notes Secured by First Mortgages, 50% maturing within one year	13%
Farmers' Notes Secured by Mixed Chattels, maturing within 4 months	17%
Unsecured Customers' Loans.....	25%
Total	<u>100%</u>

The capital and surplus of \$175,000 were invested in the bank building and equipment, and in long term bonds. The latter, which had been held over a period of years, had depreciated in value because of rising interest rates and could not be liquidated without a five to ten point loss.

At the November meeting of the board of directors, it was deemed advisable, because of the fact that 50% of the loans of the bank matured during the next six months, to determine upon a general policy to govern the lending and investment operations of the cashier. There was an active demand for loans by ranchers and farmers located in the vicinity who were using the proceeds to make payments on land purchases, to buy farm machinery and equipment, including automobiles, and to use for general farm purposes, including the purchase of live stock. Many competing banks which did not have funds to invest currently bought farmers' notes for resale, in order to make a brokerage profit. In most instances these loans were secured by chattel mortgages on herds of cattle, herds of sheep, or on mixed chattels, consisting of horses, harness, farm implements not otherwise pledged for debt, and miscellaneous equipment.

The paper secured by beef herds usually was sold by the bankers to organizations, commonly known as cattle loan companies,¹ located at the terminal live stock markets. The other loans were

¹Cattle loan companies were banks located at the terminal markets, which made a specialty of loans to cattle breeders and dealers.

sold to bankers, and in a few cases to investors in the vicinity and in neighboring states. The notes purchased by the cattle loan companies yielded 6% or 7% interest. The rate depended upon the borrower's equity in the herd and the balance maintained by the negotiating banker with the cattle loan company at the terminal market. The cattle loan companies, in turn, sold these notes either with or without endorsement to eastern banks. In November, 1919, these eastern banks and private investors were buying this paper on a 7% basis, although this was fully 1% more than prevailed a year before, when money had been less in demand by such borrowers, and more plentiful among bankers.

The notes secured by mixed chattels commonly were referred to by bankers as "horse paper," and bore a rate 1% higher than that on "cattle paper." At the same time, the "cattle paper" yielded a 1% higher rate than could be secured upon the best names offered on the market by "commercial paper" brokers. Commercial paper, however, was of six months' maturity as a rule, whereas the "cattle" and "horse paper" maturities were never less than nine and in the great majority of cases were twelve months. Since these differentials in rates existed, the cashier was criticised for keeping 30% of the bank's loans in commercial paper at 6%, when an additional 2% could be secured on "horse paper." Some of the directors were confident that the bank was in an unnecessarily liquid condition.

In summing up his opinion one of the directors spoke substantially as follows:

"The past three years have seen unprecedented earnings on the farms of the states which look to this city for banking service. Interest and taxes have, in the main, been paid promptly, and the reason is not hard to find. In the three years 1914-1917 the total gross income of the farm population jumped more than 100%, reaching a figure of approximately 16 billions in 1917, and rising to still higher levels in 1918 and 1919. Thus the gross earnings of the farms this year will probably be more than double the amount of any pre-war year. Farming seems to have moved permanently to a higher level of earning power; permanent because since 1900 population has been increasing more rapidly than the acreage of improved land, and urban population has been increasing more rapidly than rural. We have seen the land in eastern Colorado we used to think waste, fit only for

prairie dogs and jack rabbits, developed into a prosperous wheat-growing section through the development of dry farming methods. The products of this poorer land are needed to produce the increased amount of food required by our population. We are simply letting 2% on about half of the bank's loanable funds get away from us, and swell the profits of eastern institutions which themselves ought to be financing the industries whose commercial paper we have been purchasing."

He advocated, therefore, the acceptance of applications for the renewal of the maturing "horse paper," and the purchase of new paper of the same character with the proceeds of the maturing commercial paper.

The cashier then stated his position:

Regardless of the form of the transaction, the bank, through its purchase and renewal of chattel mortgage paper, is actually financing the equipment or plant of the borrowing farmers. Obviously the indebtedness cannot be liquidated out of current production without exceptional and now quite clearly unanticipated circumstances as to crop yields and crop prices. In short, the bank is offered 2% more interest on "horse paper" than upon commercial paper, and to obtain this must take paper of longer maturity and less liquid security. Because this class of paper was a good purchase early in the year—when demands from commercial borrowers were low, and the rate on customers' loans was 5½%—it did not follow that it was good policy to renew that class of loans as they matured. On the other hand, pressure should be brought to bear upon all borrowers who have given notes secured by chattel mortgages or such miscellaneous assets as horses; and the avails thereof should be put into commercial paper of the highest grade to be obtained, regardless of rate. In any event the bank should not purchase more notes of this class thereby making more loans which are essentially advances of fixed capital. The reason for this is that a large demand for accommodation is to be expected for our own customers during the months ahead, and because of the outstanding commitments to them, we should get into an even more liquid condition in anticipation of that possibility.

Which policy should the directors have outlined for the cashier? Why?

15. HALLIDAY TRUST COMPANY—MEMBERSHIP IN FEDERAL RESERVE SYSTEM BY A STATE BANK

The Halliday Trust Company had a capital of \$1,000,000 and surplus of \$3,500,000. Its stock paid dividends of 32% and sold

for almost \$500 per share. In 1917, a request was received from the Federal Reserve Bank of the district to join the system. The Halliday Trust Company was the only institution of importance in its locality which had not become a member.

The most important of the bank's activities were carried on by the trust company, which acted as executor for estates and performed other trust functions permitted by the state law. The two other activities were the rental of safe deposit boxes and the receipt of deposits from individuals for checking accounts. Total deposits averaged \$16,000,000. Funds of the bank were invested in securities and in loans. Time loans to individuals were made only when collateral was received as security. Call loans secured by stocks and bonds were made to brokers, and money was lent on mortgages. The bank purchased mill paper endorsed by responsible selling firms, but did not invest in other commercial paper. Of the total amount of loans, approximately 20% consisted of the mill paper and loans secured by United States Government obligations, and these were eligible for rediscount at the Federal Reserve Bank. The bank did not engage in commercial banking, whereby credit was granted to depositors on notes, and hence, no obligation to satisfy customers' credit requirements existed.

Under the state law, the bank was required to maintain a reserve of 20% against deposits. A cash reserve of 4% was necessary. Half the remaining 16% reserve was invested in United States Government securities, which yielded $4\frac{1}{4}\%$ to $4\frac{1}{2}\%$. The other half was deposited in four local banks which were members of the Federal Reserve System; $2\frac{1}{4}\%$ to $2\frac{1}{2}\%$ interest was received. In return for these deposits, the banks were willing to perform services such as transferring funds in other parts of the United States and supplying new bills to be paid out as cash to customers. The reserve requirement of the Federal Reserve Bank for institutions in the same class as the Halliday Trust Company was 10% of deposits, which had to be deposited in the Federal Reserve Bank; this amount yielded no interest.

The privilege of clearing checks through the Federal Reserve System had been extended to the Halliday Trust Company by the local clearing-house association of which the president of the bank was a director. Several of the directors of the Halliday Trust Company were also directors in local member banks. This was not permitted under the Federal Reserve System. The Federal

Reserve Act prevented a bank from holding its own stock in its treasury. The stock of the Halliday Trust Company was non-transferable, and in order to maintain this feature without inconvenience to stockholders, the practice of the bank was to purchase shares, whenever offered, at the price which the holder had paid for them. There were usually about 100 shares of stock in the treasury.

The officers realized that to the general public membership in the Federal Reserve System was synonymous with safety and strength and that the bank's prestige might be increased by joining. The benefits to be derived, however, were not sufficient to induce them to assume membership.

16. PENNSYLVANIA SECURITY TRUST COMPANY—LIQUIDATION OF BOND ACCOUNT¹

The Pennsylvania Security Trust Company was formed January 6, 1921, by merging the Pennsylvania National Bank and the Security Loan and Trust Company of Philadelphia. Both banks were about 40 years old and always had been managed conservatively. Upon the death of the president and founder of the Security Loan and Trust Company, the senior vice-president, who had served the bank in various capacities for 20 years, was placed in temporary charge by the board of directors. When the merger was formed he became president and managing executive of the Pennsylvania Security Trust Company. The president of the Pennsylvania National Bank became chairman of the board of directors. Negotiations were completed early in December, 1920, and the stockholders of both banks ratified the agreement to merge.

The merger solved several difficulties for the two banks. First, the president of the Pennsylvania National Bank was not an experienced chief executive; under the new plan a banker qualified for the position was obtained. Second, increased capital under one management provided better service for the banks' customers. Third, economies in operating the banks appeared possible. Fourth, the merger made possible the construction of one building adequate for the combined banks. Although their quar-

¹ See "Short Time Investments in Bonds by Commercial Banks," *Harvard Business Review*, vol. 1, p. 485.

ters were inadequate, it had been recognized by the board of each bank that the volume of transactions did not justify the cost of erecting modern buildings at the prevailing high prices.

The amount of the investment account of the Pennsylvania Security Trust Company, as shown by the initial balance sheet, was determined by an inventory of the investment holdings taken over from the two constituent banks on the basis of prices of November 30, 1920. These holdings included blocks of railroad bonds which had been purchased from time to time for "secondary reserve" purposes and for the savings department of the Security Loan and Trust Company. The majority of these bonds had declined materially in price. Since they were bought as investments, the individual banks previously had not written down the values to current market quotations, but a "special reserve" was provided in the accounts of the Pennsylvania Security Trust Company. Some typical examples of these bonds were:

Atchison Gen. 4s of 1995; inventoried at 75 $\frac{3}{4}$.

\$ 5,000 bought March 1, 1896, at 80.

10,000 bought July 1, 1899, at 103.

5,000 bought April 20, 1904, at 91 $\frac{3}{4}$.

3,000 bought January 2, 1908, at 95 $\frac{3}{4}$.

Baltimore & Ohio Prior Lien 3 $\frac{1}{2}$ s of 1925; inventoried at 82.

\$6,000 bought November 10, 1899, at 94.

4,000 bought February 19, 1908, at 90.

6,000 bought April 12, 1911, at 92 $\frac{1}{2}$.

Chicago & Alton Refunding 3s of 1949; inventoried at 44 $\frac{1}{2}$.

\$8,000 bought February 15, 1911, at 73.

Erie 1st Con. Gen. Lien 4s of 1996; inventoried at 58 $\frac{1}{2}$.

\$10,000 bought January 19, 1904, at 84.

Great Northern (C. B. & Q. Col. Tr. 4s of 1921); inventoried at 96 $\frac{1}{2}$.

\$10,000 bought October 3, 1904, at 97.

Kansas City Southern 1st 3s of 1950; inventoried at 53.

\$6,000 bought March 15, 1907, at 70.

Lake Shore Ref. 3 $\frac{1}{2}$ s of 1997; inventoried at 85.

\$20,000 bought July 1, 1899, at 111.

2,000 bought March 1, 1904, at 101.

Missouri, Kansas & Texas 1st gold 4s of 1990; inventoried at 58 $\frac{3}{4}$.

\$6,000 bought May 31, 1896, at 85.

3,000 bought January 2, 1908, at 94.

Mobile & Ohio 1st 6s of 1927; inventoried at 97.

\$3,000 bought November 4, 1908, at 124.

2,000 bought April 3, 1911, at 120.

- New York Central 3½s of 1997; inventoried at 69.
\$10,000 bought July 14, 1898, at 105¼.
12,000 bought February 19, 1904, at 96¾.
12,000 bought June 12, 1911, at 88.
- Northern Pacific Prior Lien 4s of 1997; inventoried at 76¾.
\$5,000 bought November 24, 1899, at 102.
3,000 bought December 15, 1907, at 98.
- Pennsylvania 4s of 1948; inventoried at 86.
\$20,000 bought March 17, 1909, at 104.
- Reading Gen. 4s of 1997; inventoried at 82½.
\$5,000 bought July 14, 1889, at 88¾.
- St. Louis & S. W. 1st 4s of 1989; inventoried at 66.
\$3,000 bought December 12, 1909, at 93¾.
- Southern 1st Con. Gold 5s of 1994; inventoried at 86.
\$5,000 bought August 8, 1910, at 104.
- Toledo, St. Louis & W. Prior Lien 3½s of 1925; inventoried at 80½.
\$2,000 bought September 14, 1911, at 87½.
- West Shore 1st 4s of 2361; inventoried at 70.
\$10,000 bought May 31, 1896, at 109.

At the time of the purchase of these issues by the two former banks the opinion of the investors had been that with the exception of United States Government securities railroad bonds were the safest investment possible. The bonds purchased had advanced steadily in price during the first 15 years of the banks' history; bankers generally had placed surplus funds in the highest grade railroad mortgage bonds. This policy had been followed by the officers of the two banks even after the anti-railroad agitation which began about 1903 and culminated in the passage of the Hepburn Act in 1906 and the Mann-Elkins Act in 1910.

At a meeting of the officers on April 1, 1921, two questions concerning the disposition of the bonds of the Pennsylvania Security Trust Company were discussed. One involved changing the type of a portion of the securities held, and the other pertained to borrowing relations with the Federal Reserve Bank. Loans and discounts of both banks had increased during the previous year in order to supply customers with funds to finance commitments made during 1920. This expansion was made possible by rediscounting at the Federal Reserve Bank. On March 31, 1921, the bank's indebtedness was approximately \$11,250,000,

PENNSYLVANIA SECURITY TRUST COMPANY—REPORT OF
 CONDITION, MARCH 31, 1921

RESOURCES	LIABILITIES
Time Loans.....\$30,734,178.82	Capital Stock.....\$ 6,000,000.00
Demand Loans.... 21,557,597.49	Surplus 1,000,000.00
Real Estate Loans. 2,842,710.70	Undivided Profits.. 1,890,112.08
United States Bonds and Certificates.. 2,716,089.28	Bond Account Re- serve 500,000.00
Bonds and Stocks. 6,392,060.37	Reserved for Taxes and Interest.... 363,054.23
Capital Stock, Re- serve Bank of Philadelphia.... 210,000.00	Dividend Account. 150,055.00
Bank Premises.... 775,000.00	Rediscounts with Federal Reserve Bank 9,213,340.67
Other Real Estate Owned 25,976.01	Bills Payable with Federal Reserve Bank 2,025,000.00
Overdrafts 1,141.23	Letters of Credit Outstanding .. 207,509.88
Customers' Liability on Letters of Credit 207,509.88	Acceptances Exe- cuted for Cus- tomers 530,407.07
Customers' Liability on Acceptances.. 530,407.07	Deposits 58,501,433.98
Cash and Sight Ex- change 14,388,242.06	\$80,380,912.91

\$2,000,000 of which was secured by United States Government obligations.

The trust officer suggested that the bank sell its high-grade railroad bonds, although in many instances this involved a slight loss in principal in addition to the book loss taken at the time of the merger, and that the funds thus realized be reinvested in more recent securities which yielded a higher rate of return. Industrial corporations in order to fund bank loans and debts to merchandise creditors were floating loans on a 7½% and 8% basis. He stated that the long term railroad bonds were selling at a higher price, and consequently at a lower yield, than the inherent value and investment desirability of these bonds warranted. The yield on 10 first-grade railroad bonds averaged 5.28% during March, 1921. He considered these bonds somewhat similar to bank stocks which ordinarily sold at a low yield. This situation existed in the case of the bank stocks, because they were not bought for the investment yield but for the voting power which they bore.

PENNSYLVANIA SECURITY TRUST COMPANY—REPORT OF
CONDITION, MARCH 31, 1922

RESOURCES	LIABILITIES
Time Loans.....\$31,863,148.56	Capital Stock.....\$ 6,000,000.00
Demand Loans.... 17,038,591.67	Surplus 1,000,000.00
Real Estate Loans 2,551,834.92	Undivided Profits.. 1,772,463.96
United States Bonds and Certificates. 1,544,922.04	General Reserves.. 1,000,000.00
Bonds and Stocks.. 5,995,635.81	Reserved for Taxes and Interest.... 306,615.85
Capital Stock, Re- serve Bank of Philadelphia 210,000.00	Dividend Account. 151,115.00
Bank Premises.... 775,000.00	Letters of Credit Outstanding.... 295,896.37
Other Real Estate Owned 15,558.29	Acceptances Exe- cuted for Cus- tomers 449,770.92
Overdrafts 12,429.39	Deposits 66,340,901.51
Customers' Liability on Letters of Credit 273,146.40	
Customers' Liability on Acceptances.. 449,770.92	
Cash and Sight Ex- change 16,586,725.61	
	<u>\$77,316,763.61</u>

Two principal questions were involved in deciding whether or not to liquidate the holdings. First, could the high-grade securities of former issues be sold in competition with the newer securities which carried higher rates of interest? Second, if the probable course of interest rates during the ensuing four or five years were considered, what would be the relative change in the price of these old securities and the newer securities which bore higher interest rates?

The president of the Pennsylvania Security Trust Company, although inclined to accept the suggestion that the bank dispose of its long term railroad bonds, did not favor the purchase of many of the issues then on the market. Typical examples of these were:

American Agricultural Chemical..20-year 7½s	selling to yield 7.75
Armstrong Cork Company.....10-year 7s	selling to yield 7.80
Barnsdall Corporation .....10-year 8s	selling to yield 8.45
Cuban-American Sugar .....10-year 8s	selling to yield 8.00
Pennsylvania Railroad .....15-year 6½s	selling to yield 6.58

He proposed that the proceeds of the sales be used to pay off part of the debt to the Federal Reserve Bank, on which 5½% interest was being paid. An advance in the interest rate was likely to occur in the ensuing months. He directed the attention of the officers to the latest statement of the Pennsylvania Security Trust Company, and emphasized the importance of paying the debt as soon as possible. The statement is given on page 188.

Should the investment holdings have been liquidated?

If the bonds were disposed of, what use should have been made of the proceeds?

The March 31, 1922, report of conditions appears on page 189.

C. THE MARKETING OF SECURITIES

17. WAMOSET TRUST COMPANY—ESTABLISHMENT OF A BOND DEPARTMENT

In 1914, the Wamoset Trust Company had under consideration the establishment of a bond department. All the officers were not convinced, however, of the advisability of this step. Those who were opposed to the plan pointed out that a trust company should not take the risk necessarily involved in the underwriting of new bond issues. Successful syndicate operations were profitable, but participations in unsuccessful syndicates frequently resulted in heavy losses. Even though the actual losses on individual issues were small and were offset amply by profits from successful issues, the company might lose depositors who preferred not to maintain an account with a bank whose capital was subject to impairment through activities of a bond department.

The confidence of depositors would be lessened if the bond department sold them bonds on which there was a liberal profit, instead of bonds of the more conservative type that the Wamoset Trust Company had recommended in the past. Maintenance of a bond department was likely to be disadvantageous to the other departments, since customers might be of the opinion that the trust department bought unseasoned securities from the bond department's list at a profit to the latter, when bonds more suitable for trust funds should have been purchased from investment bankers, and that funds available for commercial loans were reduced because preference was given the bond department.

The sponsors of the plan did not deny that syndicate participation involved risk. For many years, however, the company had participated as underwriters in both buying and selling syndicates; but, since it had no salesmen, it had not taken up any bonds except when it desired them for investment or when the other participants failed to subscribe for the entire amount. It merely had assumed a share of the risk of distribution. This limited participation in syndicates had been a source of profit, since the occasional losses had been small. Those in favor of establishing the new department contended that it diminished rather than increased the risk, since the company could sell a portion of its allotment itself and thus reduce its liability.

The company had not given investment advice regularly, and the number of its purchases and sales of securities for depositors was small. Many of its customers, however, bought bonds of new issues from salesmen of other investment firms; if the bond department were established, they could buy equally secure bonds from the Wamoset Trust Company. Bonds on hand were not to be sold to depositors whose requirements called for other types.

Under the proposed plan, the trust department was not to be allowed to purchase bonds from the bond department at a profit to the latter, or to purchase bonds from the bond department's list which were unsold after the close of the syndicate. A restricted list of bonds eligible for purchase was to be maintained in the composition of which the bond department offerings were not to be given preference. The bond department was to borrow from the loan department at the call loan rate and was required to provide the regular security, but the latter was to be under no obligation to lend.

The sponsors of the plan, therefore, did not consider the disadvantages suggested inherent in all bond departments of trust companies. The establishment of the department furthered the attainment of the Wamoset Trust Company's plan of providing its depositors eventually with every financial service. The facilities which the company had at hand were stressed. As a nucleus for their list of customers, salesmen were to have access to the names of the company's 40,000 depositors, who, accustomed to using the other departments, might buy bonds through the company. The Wamoset Trust Company, furthermore, had

an excellent reputation and great resources, and with syndicate connections already made, its ability to offer bonds of the highest grade was assured.

In addition to being a source of profit the department was to be utilized to benefit other departments; from it the trust department could buy desirable bonds at a lower price than was possible otherwise. Through the bond department's knowledge of investment conditions, and by the use of its statistical records a more accurate analysis could be made of the bonds held in trust than the trust department had been able to make. Also, bonds to be held in the company's investment account could be selected more carefully. When the loan department needed funds for business loans during periods of great business activity, the bond market ordinarily was dull and the bond department's loan requirements were reduced; when business was inactive, there was a strong demand for bonds, and the bond department could use profitably the company's otherwise idle funds. The company's capital, therefore, could be employed advantageously at all times.

In view of these considerations it was decided to establish a bond department.

18. BURGESS NATIONAL BANK—NATIONAL DISTRIBUTION OF THE STOCK OF A COMMERCIAL BANK

The 250,000 shares of stock in the Burgess National Bank were held locally, for the most part, by 2,000 individuals. In June, 1923, the largest stockholder, who owned 14,000 shares, asked the bank's directors to purchase his stock or arrange for its sale. No situation of this sort had ever arisen before, and recurrence was unlikely. Officials of the bank met to decide upon a method to employ in marketing the stock. There was a small and intermittent local market, although the Burgess stock was not listed on the local exchange. The directors of the Burgess National Bank considered the market price of Burgess stock inconsistent with the market prices of stocks of other banks in the community. At the last quotation of \$270 the stock yielded 5½%; other bank stocks were selling on a 4½% basis. It was apparent that the local market would have to be cleaned up and the price of the stock raised to its proper level before the 14,000

shares were sold, either locally or nationally. It was not known how many shares would have to be purchased before the market position of the stock could be considered satisfactory.

Two alternative methods of distribution were open: one was to sell the stock locally, the other to sell nationally. Local distribution meant that it would be necessary to sell a number of large blocks of stock to wealthy individuals. The difficulty of this task—aside from any questions of policy that might be involved—turned attention to the plan of national distribution.

National distribution in comparatively small lots, on the other hand, appeared practicable. The Burgess National Bank had developed into a national institution with 5,000 correspondents and commercial customers located throughout the United States. It was felt that a national distribution of the bank's stock would have an advertising value and be of far reaching effect in the way of added good-will.

The management of the Burgess National Bank controlled a securities company with a capital of \$1,000,000 which sold securities only at wholesale. This company could conveniently be used to manage the distribution of the bank stock. But since distributors having a national retail distribution were needed and since it was estimated that some \$5,000,000 would be required both to purchase the block of stock offered and to clean up the local market, a decision was reached to have the securities company form a group of underwriters.

Accordingly, a group was formed consisting of the securities company and three nationally known investment firms that had exceptional syndicating ability and in two instances well-established investment clienteles. These firms underwrote the stock at a certain price and formed a secondary selling group of dealers. This group sold the stock at a commission of \$5 per share.

The distribution of the stock, although undertaken in the face of a declining and inactive stock market and an inactive bond market, was completely successful. The stock was soon placed in the hands of more than 1,000 investors residing in all parts of the United States. The price of the stock rose from 270 to 310 in less than six months and the entire market situation was firmly established.

In October, the dividend rate on the bank's stock was raised

from 14% to 16%. This rate was entirely warranted by earnings but, of course, helped to maintain the market price of the stock. Net profits of the bank at the end of 1923 were over \$6,000,000 compared with \$5,316,000 in 1922, after allowing fully for possible losses, adjusting bonds and securities to their market value and setting aside \$1,000,000 for 1923 taxes.

19. HUDSON TELEPHONE COMPANY—INCREASE OF DIVIDEND RATE ON COMMON STOCK PRIOR TO A NEW ISSUE

For five years prior to 1921, the annual requirements of the Hudson Telephone Company for capital for extensions and improvements had been filled by the sale of bonds. There had been no offering of stock since 1916. As a result of this plan, the bonded debt of the company had become larger than the outstanding stock, so that the company's practice of conservatism made a further issue of bonds undesirable. In 1917, the capital stock was 55% of the total capital liabilities. The ratio of capital stock to total capital liabilities had decreased to 46.6% by 1920 and was the same in March, 1921. Since a further increase of bonds was not in accordance with the practice of the company, an issue of stock was proposed to improve the ratio between the two classes of securities, and to make possible further financing through bond issues at a favorable rate in subsequent years when additional funds were needed. The company was required by law to offer all new stock to stockholders at not less than par. The market price of the stock for more than a year prior to March, 1921, had fluctuated near or below par. This fact naturally prevented the sale of new stock at par. The proposal was made, therefore, to raise the dividend rate from 8% to 9%, in order to increase the market price sufficiently to insure the successful sale of stock at par then as well as in the future.

An undesirable feature of the proposal was that the dividend increase would be made in a period in which the company and utilities in general were requesting rate increases. Although these increases were justified by higher costs of operation, it was possible that a higher dividend might convey the impression that the earnings of public utilities, particularly the telephone companies, were substantial and that consequently higher rates were not required.

A second possible disadvantage of this proposal was that the company might burden itself indefinitely with a higher dividend rate on the entire capital stock, which in the future might prove difficult to maintain. The maintenance of the dividend was necessary in order to sustain the high standing of the company among investors and furthermore because the stockholders included a substantial number of small investors. If the dividend was raised, a reduction at some later time might injure the company's credit position and reputation among investors, particularly the small investors, upon whom the company relied for a substantial part of the investment capital needed to finance the expansion of its facilities.

An increase in the dividend rate, furthermore, increased the cost of all capital raised in the future through the sale of stock. If the company could pay a higher dividend rate without difficulty this disadvantage was not important, for the increased expense was offset by the greater ease with which the stock could be sold. If, however, there was any possibility that the earnings of the company might not be sufficient to pay the higher dividends on increased stock with a margin for surplus, the increase in the rate was likely to have a detrimental effect upon the standing of the company among investors. Under such circumstances, unless the dividend could be decreased, which it has been shown was equally undesirable, future financing through the sale of stock would become more difficult.

The company, however, did not foresee any difficulty in the payment of a 9% dividend on its capital stock. The net earnings available for dividends in each of the preceding 16 years had been over \$9 per share of stock and the average for this period was over \$10 per share. As a result of the conservative capitalization of the company a return of 9% on the capital stock with no margin for surplus required earnings of less than 5% on the property of the company. Up to this time the courts had interpreted the constitutional guarantee of a reasonable rate of return as being over 5%. There was no prospect of a change in relations between the company and the public or of a decrease in the amount which, in the opinion of public utilities commissions, constituted a reasonable rate of return. It did not appear, therefore, that any difficulty was likely to be experienced in the future in the payment of a 9% dividend.

The Hudson Telephone Company was in a different situation from manufacturing companies, whose increases in plant investment ordinarily were at long intervals and were not required by every addition to their business. Every increase in the service provided by the Hudson Telephone Company required a corresponding increase in the investment in plant and facilities. The constantly increasing demand for telephones each year made additions to central offices, switchboards, underground cables, and pole lines necessary in order to provide the desired service. The demand continued year after year so that, in prosperity and depression, the company was in constant need of additional capital with which to provide for improvements, extensions, and replacements.

The proposed change in the dividend rate was to enable the company to meet the public requirement for telephone service. It was obviously impossible for the company to meet its public obligation to the communities served by it, unless it could obtain a constant supply of investment capital with which to finance the expansion of its facilities. For five years the required funds had been borrowed on short term notes, convertible bonds, and mortgage bonds until the debt had increased to such a proportion that the soundest financial policy required the obtainment of more capital from the owners of the property rather than from further loans.

If the stock sold at a premium, a readiness by investors to absorb further issues was indicated. Par value indicated a satisfactory absorption of the outstanding amount of stock, but no demand for more at the same rate of return. It had been the policy of the company to pay a dividend rate which maintained the stock at a sufficient premium to attract subscriptions to new stock issues. Before the World War the 8% dividend had maintained the stock at a satisfactory premium; since 1918, however, the price had not risen above par. A higher rate was believed to be necessary to raise the price of the stock above par so that the company could secure money through stock issues in the future. The proposed increase in the dividend rate was, therefore, nothing more than an adjustment to changed investment conditions.

The company decided to raise its dividend rate to 9%. The market price of the stock rose immediately to about \$108, so that it was possible to offer the proposed issue of stock at par. Subscriptions were received for over 93% of the stockholders' rights.

The market price fluctuated around \$105 for several months following the announcement of the new stock issue, and between this point and \$110 during the remainder of the year until November, when it increased to about \$117.

20. LYONS RUBBER COMPANY—INCREASE OF CAPACITY FINANCED IN 1923 BY ISSUE OF PREFERRED STOCK

The Lyons Rubber Company, situated in a middle-western city, was engaged in the manufacture of automobile tires, fan belts, and radiator hose which it sold to wholesalers and to manufacturers. From the time of the company's organization in 1910, the physical volume of sales had increased phenomenally. In February, 1923, prospective sales for the year were the greatest in the history of the company; the president, therefore, advocated a \$375,000 issue of preferred stock to equip the idle buildings and to provide additional working capital.

In 1918, the plant consisted of a group of buildings, principally of brick and concrete, of the most modern factory design. It was located on the main line of three railroads and had exceptional shipping facilities. Over 200,000 square feet of floor space were utilized by the operating departments. The output and sale of pneumatic tires and tubes increased steadily during 1919; therefore, because of insufficient factory space, all pneumatic tubes were made in a leased plant several hundred miles east and shipped to the main factory for distribution. In spite of the fact that the western plant was operating 24 hours a day, the company was not in a position, in September, to accept an increased volume of orders or to expand its sales territory without a further increase in production. Such an increase was impossible without additional space, since the existing buildings and equipment were utilized to capacity. An addition of 150,000 square feet of floor space with equipment, therefore, was proposed to make possible an increased output of 1,500 tires per day. Since orders already secured were sufficient to consume the entire potential output of the plant operating 24 hours per day for the rest of the year, the officers were confident that enough orders could be obtained to justify the suggested increase in capacity.

The principal product of the factory was the Lyons Re-Sole Tire, a rubber tread and jacket which was cemented to partially

worn out casings. It gave the appearance of an over-size tire, and had a strong conservation appeal. The other products were the Lyons Master Tread pneumatic tire, a cord and fabric tire sold in competition with the best grade of tires; inner tubes; tire repair materials; and leather and rubber belting. The tire output was sold in the replacement market, through authorized retailers. Many of them had been secured originally to sell and attach the Re-Sole Tire, which was the first rubber product of the company, and was protected by design patents and registrations in the United States, Canada, and in European and South American countries. The belting produced was of a patented design and confined chiefly to that used for automobile fans. In September, 1919, signed contracts with manufacturers and wholesalers required 5,000,000 belts, or about two-thirds of all the fan belts used in the United States in that year.

Over 95% of the company's output was sold on a strictly cash basis through automobile manufacturers, wholesalers, and exclusive agents. As the result of advertising during the five years prior to 1919, and of the activities of 38 traveling salesmen, a satisfied group of retailers had been secured as customers. The contracts specified a definite quota each 30 days, for which payments were made upon delivery. The company expected that the retailers already secured were prepared to increase sales at least 50%. There had been no effort to sell abroad, but sales inquiries from South America and from foreign countries elsewhere suggested that a potential demand existed. The total sales from 1915 to 1918 indicated the rapid expansion of the company.

1915	\$ 321,000
1916	606,000
1917	1,650,000
1918	3,662,000

Estimated net earnings for 1919, available for dividends on preferred stock, amounted to \$450,000 before deduction of government income and excess profit taxes. Average net earnings for the four years prior to 1919 were about \$175,000. Moreover, the estimate of sales for 1919 exceeded \$6,000,000. If seasonal conditions made it possible to manufacture in the new buildings without delay, it was estimated this amount would be exceeded for 1920 by midsummer of that year.

The addition of floor space, it was estimated, would make it possible to transfer the manufacture of tubes from the eastern factory to the western plant. The use of a portion of the new plant for the reclamation of the old rubber to be used for the manufacture of hose, also was proposed. No such plant existed in the West, and many worn-out tires were shipped regularly to factories in the East. A national advertising campaign, furthermore, of broader scope than any previously undertaken was suggested.

In order to provide the desired space and to furnish additional working capital, it was decided to issue \$600,000 of 7% cumulative preferred stock of an authorized issue of \$1,600,000. The following general provisions which safeguarded the preferred stock were included in the articles of incorporation of the company:

1. Cumulative dividends on preferred stock are payable out of net earnings of the company, or, in case of deficiency of net earnings in any one or more years, such deficiency shall be paid out of surplus or future net earnings before any dividends shall be set apart or paid on the common stock.
2. So long as any preferred stock is outstanding, the company must maintain its net quick assets at not less than one hundred ten (110%) per cent of all outstanding preferred stock, plus unpaid dividends and redemption fund arrearages.
3. No dividends can be paid on the common stock of the company—
 - (a) Unless net quick assets are more than the outstanding preferred stock, plus unpaid dividends thereon;
 - (b) When or so long as preferred stock dividends or preferred stock redemption fund requirements are in arrears;
 - (c) In excess of \$21,600 per annum unless an amount equal to the excess over \$21,600 be also used for the redemption of preferred stock, in addition to the obligatory redemption fund requirements.
4. No additional preferred stock can be issued by the company—
 - (a) Unless net earnings for twelve out of the previous consecutive fourteen months have been equal to at least five times the dividend requirements on all outstanding preferred stock and that proposed to be issued;
 - (b) Nor so long as there remain unpaid dividends on outstanding preferred stock;
 - (c) Nor so long as redemption fund requirements with respect to the preferred stock shall remain in arrears.

5. No mortgage or other lien can be placed upon the property without the consent of seventy-five (75%) per cent of the preferred stockholders.

6. If the company shall have defaulted in the payment of four consecutive quarterly preferred stock dividends, or in the event the company shall have defaulted for the period of two years with respect to the preferred stock redemption fund requirements, the holders of the preferred stock shall then have the right to elect the minority directors out of the number authorized by the Articles of Incorporation, and if the company shall have defaulted in the payment of five consecutive quarterly preferred stock dividends, or if the company shall have defaulted for the period of two and one-half years with respect to the redemption fund requirements, the holders of the preferred stock shall then possess all the voting powers for every purpose until such default shall be made good by the company. The preferred stock of the company and the dividends, thereon, are exempt from the present Normal Federal Income Tax and from all state taxes.

The redemption fund referred to above provided for the deposit of \$60,000 with the company's transfer agent on March 1, 1920, and \$30,000 thereafter on September 1 and March 1 of each year. These deposits were for the purchase and redemption of preferred stock at a price not to exceed 110 and accrued dividends.¹

With the proceeds of this issue, which was purchased by a banking firm and sold to its local clientele at 98, a former issue of \$300,000 of first mortgage 6% bonds due on March 1, 1920, was retired at 101. The construction program also was under-

¹The balance sheets of the Lyons Rubber Company at the dates indicated are shown below.

ASSETS	Feb. 1, 1919	Oct. 31, 1920	Oct. 31, 1921	Oct. 31, 1922
Cash	\$ 262,000	\$ 62,000	\$ 102,000	\$ 99,000
Accounts Receivable	231,000	735,000	537,000	427,000
Inventory	602,000	1,528,000	704,000	601,000
Notes and Acceptances	36,000	90,000	28,000	22,000
Plant and Equipment	503,000	1,275,000	1,150,000	1,002,000
Patents, etc.	97,000	90,000	82,000	75,000
Suspense Accounts	28,000	31,000	34,000	28,000
Total	\$1,759,000	\$3,811,000	\$2,637,000	\$2,254,000
LIABILITIES	Feb. 1, 1919	Oct. 31, 1920	Oct. 31, 1921	Oct. 31, 1922
Notes Payable	\$ 300,000	\$ 1,127,000	\$ 563,000	\$ 265,000
Accounts Payable	85,000	345,000	93,000	91,000
Reserve for Taxes	40,000	68,000	50,000	50,000
Bonds	300,000			
Preferred Stock		510,000	420,000	330,000
Common Stock	450,000	450,000	450,000	450,000
Surplus	584,000	1,311,000	1,056,000	1,068,000
Total	\$1,759,000	\$3,811,000	\$2,637,000	\$2,254,000

taken in order to provide a 50% increase in floor space and much needed storage and warehouse room.

The buildings were completed and ready for occupancy by midsummer of 1920. At that time, however, since the directors deemed it advisable to conserve the cash resources of the company, only one-half of the equipment originally planned was installed.

During 1921 and 1922, production was carried on at capacity. Sales for the years 1919-1922 were as follows:

1919.....	\$5,350,000	1921.....	\$3,943,000
1920.....	5,274,000	1922.....	4,250,000

The physical volume of sales increased each year; in 1922 it was 50% greater than in 1921. The plant was operating continuously and producing 600 tires per day more than at the maximum seasonal peak of preceding years. Depreciation was charged currently on real estate, buildings, and equipment, which were appraised by local experts at 30% above their book value. The preferred stock outstanding was reduced \$330,000 by the sinking fund. Profits were made in each year; in 1922 they amounted to \$403,000.

There were indications in March, 1923, justified by orders received, that sales for the year were likely to exceed those of any year of the company's history both in dollars and in units of merchandise. Sales of the Master Tread tire were increasing greatly. This brand had replaced the Re-Sole tire as the principal item in the company's sales. Automobile manufacturers were placing contracts for hose and fan belts.

Marketing methods had not been changed though the company had expanded. Tires and tubes were sold through 4,000 retailers, which were reached through a factory and branch sales organization of over 100 men. Radiator hose, which had been added to the accessory line during 1921, and fan belts were sold directly to wholesalers and manufacturers. The company maintained division offices and warehouse stocks in Jersey City, Chicago, Portland, San Francisco, and Los Angeles and a sales office in Detroit. The opening of similar branches in St. Paul, Atlanta, and El Paso was considered. The latter branch was to promote distribution in Mexico and the southwestern part of the United States.

The management of the company had remained in the control of the original organizer; and the departmental executives, with one exception, had been in the employ of the company for at least five years. The Lyons Rubber Company was one of the few rubber companies which showed a substantial net profit during 1921; in 1922, its earnings aggregated about 18 times the amount necessary to pay dividends on the total outstanding issue of preferred stock.

On the basis of this record, the president deemed a request for further financing justified. He suggested to a local banking firm that the provisions of the new issue should be the same as those of the 1919 issue and that the holders of each should possess equal rights. The 1919 issue was selling currently at 98 to yield 7.15% and he expected the new issue to be marketed at the same price.

The investment banking firm stated that the existing situation differed from that in 1919 in several ways. In the first place, the tire production of the company constituted a greater proportion of the total in the United States. Hence, if a general business depression was experienced, the Lyons Rubber Company could not rely on its continued growth to maintain its volume of sales.

The emphasis, furthermore, had shifted to the Master Tread tire and away from the Re-Sole tire. The latter had been sold to many consumers who were unable to invest in more expensive equipment, but there was no indication that the demand for Master Tread tires would not decline if business conditions became unfavorable. The 1919 financing, moreover, was in part for the retirement of the \$300,000 bond issue then outstanding. The payment of this mortgage had been desirable at a time when future earnings were relatively uncertain. Because of these facts, the firm hesitated to underwrite the issue, the purpose of which was to provide funds for the increase of productive capacity.¹

Was it advisable for the Lyons Rubber Company to sell additional preferred stock in 1923? Was it advisable for the investment bankers to sell the stock?

¹ In the *Harvard Business Review*, vol. 2, p. 129, there is a discussion by H. Stuart Hotchkiss, of "The Evolution of the World Rubber Situation," which considers, more especially, the crude rubber situation of recent years.

21. CLEMENT & COMPANY—SALE OF INDUSTRIAL BONDS IN THE SUMMER OF 1923

In July, 1923, Clement & Company, an investment banking firm in New York, was asked by the owner of a block of bonds of the Humbie Sugar Company, to sell them for him. The Humbie Sugar Company was a Cuban company not well known among American investors. There were \$710,000 par value of bonds in the issue, and this owner held about three-quarters of them. This block was too large, therefore, for him to sell without the aid of bankers.

The property of the Humbie Sugar Company had been acquired by the Exmoor Sugar Corporation in 1920, and consisted of one of the most important plantations in eastern Cuba. It included a sugar mill and about 15,000 acres of lands. The plantation produced sugar at as low a cost as any plantation on the island of Cuba. Its capacity was about 500,000 bags of sugar per year. The Exmoor Corporation was, in turn, a subsidiary of an American sugar company which had extensive interests on the island. In addition to owning and operating the Humbie plantation, the Exmoor Corporation operated, under lease, the mills of its parent company in eastern Cuba. The Exmoor Corporation, moreover, owned approximately 50,000 acres of fertile, virgin soil in an advantageous location.

The bonds offered to the bankers were a direct obligation of the Exmoor Corporation and were secured by a closed first mortgage on the Humbie plantation. The issue was dated June 30, 1918, and consisted of \$710,000 of 7% serial bonds. Sixty thousand dollars was due each July 30, between 1924 and 1934, and \$50,000 on July 30, 1935. The Humbie plantation was valued at \$7,864,000, or over 10 times the amount of this bond issue. Net tangible assets of the Exmoor Corporation amounted to \$17,000,000. The Exmoor Corporation had \$11,000,000 in a junior issue of 7½% bonds, due in 1937. Its entire capital stock was owned by its parent company.

For the five years previous the production of the Humbie plantation averaged 400,000 bags per year. An average net profit of \$4.50 per bag had been obtained, or \$1,800,000 per year. Interest requirements of the Humbie bonds were \$49,700 per year.

Clement & Company was of the opinion that the financial record of the company was satisfactory and that the bonds were secure. The following summary of the analysis of the sugar industry made by the bankers gave them the assurance that the sugar industry was now on a sound basis. The industry, unlike many others, had not been overexpanded greatly in fixed assets in 1919 and 1920. The losses of sugar companies in 1920 and 1921 had been caused almost entirely by losses in inventory resulting from the severe decline in the price of sugar. In 1923, the price of raw sugar was only about one-third of the high point reached in 1920, and no severe decline seemed possible. Stocks of sugar owned by producers and refiners were small when compared to what they had been in 1919 and 1920. Demand for sugar in the United States was strong, and there was no evidence that it was likely to lessen. Many European buyers who had obtained their sugar from Europe before the war now were buying Cuban sugar. The political situation in Europe did not suggest the possibility of important production of sugar in Europe for many years.

Clement & Company, however, was of the opinion that the political uncertainty in Cuba was the greatest difficulty to be overcome in selling the bonds. There had been talk of revolution in the island for many months. The bankers stated that it was impossible to tell what developments might take place in this respect, but that previously, however, when there had been any serious uprising in Cuba, the United States Government, directly or indirectly, had protected property rights on the island. The bankers were of the opinion that the United States Government was likely to follow such a policy again, should any serious conditions develop there.

Clement & Company expected a continuance of easy money rates and no decline of any appreciable extent in the bond market. Thus, it could recommend the bonds to its customers from all points of view—from the strong position of the company itself, the soundness of the sugar industry, the expected continuance of low money rates, and the improbability of an immediate decline in the bond market. Many of the customers of the investment banking firm did not consider the relation of money rates and the length of life of the bond when making an investment. Such customers usually held their bonds until maturity,

and if they could be sure of interest payments and principal of the bonds when it was due, they were satisfied. The price of the bonds in the intervening period was of little consequence to these customers. To customers to whom the price of bonds was of consequence prior to maturity, the serial feature of the Humbie bonds might be attractive if they expected higher money rates and desired short maturity bonds. Clement & Company was of the opinion that the Humbie bonds could be sold at the following rates:

Maturity	To Yield
1924	6.00%
1925	6.50%
1926 to 1935 inclusive	7.00%

A price was arranged with the owner of the bonds which gave a satisfactory margin of profit and the bankers decided to buy the issue and sell it to their customers at the above rates.

22. GRANBERRY TEXTILE COMPANY—SALE OF PREFERRED STOCK FOR NEW ENTERPRISE BASED ON AN INVENTION

The following facts were cited by bankers to induce the purchase of an offering of preferred stock in August, 1923.

Scientists for years had known of a tropical tree whose inner bark could be converted into a fiber to be made into a fabric. The raw fiber, as it was stripped from the tree, was rich in gum. It had been impossible to perfect a process by which the fiber could be degummed on a commercial scale. In 1920, a chemical process was perfected for the removal of the gum from the fiber. A corporation was organized to purchase the secret formulæ and engage in the conversion of the raw fiber.

According to the bankers' circular, it was possible, through the use of the chemical process, to convert the gummy, stringy inner bark into a soft, lustrous material with one of the longest fibers known to the textile industry. The degummed fiber had the luster of silk, great strength, and was clean, white, and beautiful. In the process, the raw material lost about 15% of its weight. This was, in part, fibers and gums, but was not waste, for it was a valuable wood pulp stated to be worth \$100 per ton. When degummed, the fiber was from 11 to 18 inches in length, compared with 4 to 5 inches for flax, and 1 to 1¼ inches for

cotton. When the finished fiber first was offered to the textile trade, experts professed skepticism and began to subject it to tests for strength and luster. Southern textile firms were amazed at the results of tests made in their own laboratories of mixing it with cotton, silk, and other fabrics. Immediately they wanted to know how soon they could obtain it in quantities.

It was stated that in Europe slight success had been obtained in the removal of the gum from the raw material, and the fiber produced was weak. Machinery had been perfected to spin the fiber, but the industry was not profitable because of the continued lack of success in the removal of the gum. Textile manufacturers and bankers in America, stimulated by the keen interest of the textile world, formed a corporation for spinning the fiber, degummed by means of the American process. This spinning plant was to utilize European processes and machinery, which were the results of years of experimentation and the expenditure of thousands of dollars by English, French, and German experts.

According to the statement of the bankers, the management of the spinning corporation expected within a year to have the capacity of its plants sold for many years in advance, inasmuch as the spun fiber was almost certain to find a permanent place in the textile industry. The expansion of the industry seemed to have no limits, for the supply of raw materials was practically inexhaustible; no figures or definite facts were given, however, to prove this contention.

The Granberry Textile Company was incorporated in March, 1923, and was the first and only organization in America to be devoted exclusively to the spinning of this fiber. The company entered into a contract with the corporation which controlled the most successful method of degumming the fiber, for the exclusive right of spinning yarn for sale to established textile mills, which in turn would use the yarn to add strength to fabrics being produced, as well as for the creation of new ones. The spinning company was guaranteed an unlimited supply of the degummed fiber, through its contracts with the producer who had perfected direct importing arrangements to protect the raw material supply.

The company secured an option and contract to purchase the necessary buildings of modern factory construction in one of the

centers of the textile industry in the South. Enough machinery for the first unit already had been purchased in the United States. In 1923, this machinery was installed and ready to put into immediate operation. The remainder of the machinery required for the plant was to be purchased abroad and installed as soon as possible. At the time of organization, the equipment was designed to manufacture a minimum of 50,000 pounds of yarn weekly. It was proposed to expand as the demand for the company's product increased. The weekly output specified was on the basis of day operations only; it could be increased by operating the plant on two or three shifts.

On August 1, 1923, the Granberry Textile Company, through its bankers, offered for sale \$1,000,000 of preferred stock. None of the proceeds of this issue was for experimentation, since all that work had been completed. According to the bankers, the purpose of this stock offering was to pay for the plant, equip it properly, and provide working capital. There was no indication as to the amount of the proceeds of the stock issue which would be required for plant and equipment or the amount which would be needed to provide working capital. It was stated that the company was starting with the full benefit of all the millions expended to perfect the system of manufacture in England, France, and Germany.

The bankers stated further that the estimates made by competent authorities in the textile world, and the management of the Granberry Textile Company, experts, and business men indicated that earnings should be sufficient to provide for an 8% dividend on the preferred stock beginning June 1, 1924, as well as dividends on the common stock. These calculations were based upon the contract for the degummed fiber and the average market price for yarns of characteristics similar to those which were to be produced. The profits accruing to the company were expected to be substantially larger than those customary in such a business.

The affairs of the company were in the control of men of exceptionally wide experience in textile manufacturing and in the financial affairs of textile companies. The names of six prominent mill men were given to substantiate this statement. No dividends could be paid at any time on the common stock, which would reduce the net assets back of the outstanding preferred

stock below \$110 per share plus accrued dividends. These were the "elements of safety" to protect the preferred stockholders.

Preferred stock was sold because of the bankers' belief in the soundness of the venture. A bonus of common stock was given with each purchase of preferred stock. In the bankers' opinion the pioneers in an enterprise were entitled to the largest share of its success.

23. KEARSARGE COMPANY—CHAIN STORE ORGANIZATION AND CONTROL¹

Golden & Company, a conservative investment banking house with a clientele that relied thoroughly upon its advice regarding reliable investments, was offered in the latter part of January, 1920, 5,000 shares of preferred stock to be issued by the Kearsarge Company, operating a chain of thirty-six 5, 10, 25 cent and \$1 stores. The Kearsarge Company had a capitalization of \$150,000 common stock and \$150,000 preferred stock. The new issue of stock proposed was \$500,000 7% cumulative, participating preferred. Practically all the holders of the previous issue of preferred stock had agreed to convert their shares into the new issue, which was to be redeemable as a whole or in part at 110 on 30 days' notice.

The Kearsarge Company had no bonded debt, and it was agreed that no mortgage might be placed on the property without the consent of three-fourths of the holders of the outstanding participating preferred stock, except that there might be a purchase-money mortgage on property acquired. It was further provided that the cumulative, participating preferred stock should receive up to an additional 1% dividend whenever net earnings for one year available for dividends on the common stock exceeded \$80,000. There was to be a sinking fund, beginning in 1921, of 3% per annum of the outstanding participating preferred stock. It was stated that the annual net profits of the company had averaged for the previous five years about 15 times the dividends on the outstanding preferred stock and were equal to almost 3½ times the 7% dividends on the participating preferred stock to be issued.

¹ Reproduced from M. T. Copeland: *Problems in Marketing*, (2nd Edition), p. 88, cited hereafter as Copeland.

The sales of the Kearsarge Company in round figures had been as follows: 1924, \$2,500,000; 1915, \$3,000,000; 1916, \$3,600,000; 1917, \$4,500,000; 1918, \$6,000,000; 1919, \$8,300,000. The balance sheet was satisfactory. The receipts from the sale of this new stock were to be used to provide funds for the expansion of the business. Locations had been selected for 25 additional stores, and the plans of the company called for expansion at the rate of 20 to 30 stores per year during the next four or five years.

At the time when Golden & Company was considering this request, the following information was available in regard to the business of the Kearsarge Company:

The Kearsarge Company's stores sold merchandise ranging in price from 1 cent to \$1, but it was estimated that 90% of the sales were articles retailing at more than 25 cents per unit. This situation was entirely in accord with the desires of the Kearsarge Company, since it had found that it could not compete effectively with the Woolworth, Kresge, and other similar stores concentrating on 5- and 10-cent merchandise. It was stated that owing to the higher range of prices in Kearsarge stores as compared with 5 and 10 cent stores, more sales effort was required. Articles above 25 cents in price did not sell themselves as readily as 5- and 10-cent articles, and consequently the employees of the Kearsarge Company had to be more than mere cashiers and bundle wrappers. The merchandise sold in the Kearsarge stores consisted of notions, novelties, hosiery, neckwear, underwear, inexpensive yard goods, children's clothing, gloves, hair goods, kitchen ware, toilet goods, pens, pencils, and stationery, pictures and frames, phonograph records, candy, toys, and other miscellaneous articles. In the latter part of 1919 a departure had been made from the company's ordinary merchandising policy by the introduction of a line of low-grade millinery with retail prices as high as \$5.

The 36 stores of this company were located in 16 eastern and middle-western cities. During 1920 it was planned to open stores in New England, New York State, Indiana, Michigan, Illinois, and Missouri. The wide range of territory covered tended to prevent the business of the Kearsarge Company from being adversely affected by fires, strikes, or other local conditions that did not affect the United States as a whole.

The main buying office and warehouse of the Kearsarge Company were located in New York City. The organization responsible to the president and directors consisted of two divisions, the financial and accounting office and the merchandise control office. The treasurer and controller formulated the company's financial policy, handled all payments, and was in general charge of the accounting, which was centralized at the New York office for the entire chain. An assistant to the treasurer and controller was in charge of real estate operations. Under the merchandise manager were six buyers and four assistant buyers. These men purchased merchandise for all the stores. Subordinate to the merchandise manager there were also four inspectors, each one covering a section of the company's territory and calling on each Kearsarge store in his district on an average of once in three weeks. Although the store managers were permitted to make local purchases, when it was necessary in order to secure the merchandise promptly, 90% of the buying was done by the six buyers and their four assistants at the New York office. All invoices for merchandise purchased locally by store managers had to be approved by the New York office before payment was made. Many manufacturers from whom this chain normally bought shipped merchandise directly to the individual stores, but the mills making piece goods, hosiery, and knit underwear, as well as those making some other goods sold by the Kearsarge Company, ordinarily were unwilling to ship in small lots to the individual stores. Consequently, the chain maintained a warehouse in New York City from which such merchandise was distributed to the various stores. All invoices for merchandise shipped directly to the individual stores had to be approved by the store managers and sent to the New York office before payment was made. It was stated that discounts occasionally were lost because of failure on the part of store managers to forward these invoices promptly. Merchandise was charged to the various stores by the merchandise office at both cost and retail, the individual items being charged at retail and the order as a whole being charged at cost. The buyers and assistant buyers had drawing accounts and received salaries based on the volume of gross profit shown by the chain as a whole and on the cash discounts which they secured.

The individual stores of the Kearsarge Company had annual

sales volumes ranging from \$50,000 to \$400,000 each. They were all uniform in appearance, layout, and merchandise classification, the same 28 departments being maintained in each store. Separate merchandise figures were kept for each of these departments, but in no case were store expenses departmentized. Store managers were paid salaries varying with the volume of sales and the ability and experience of the individual manager. In addition to a salary, the manager received 1% of the net sales of his store. Managers were entirely responsible for hiring and training salespeople. Each week a store manager was required to make a report of sales by departments, receipts of merchandise from manufacturers, from the company's warehouse, from other stores in the chain, and from local sources. This weekly report also covered store expenses, which were classified as follows: salaries, advertising, supplies, and general expense. Where stores were leased, rent was paid from the New York office and not by the individual store managers.

On the basis of the Kearsarge Company's experience in 1914 and 1915, the first two years in which these stores were in operation, a standard rate of stock-turn had been determined for each of the 28 departments. Every year sales quotas for each department of each store were determined on the basis of past performance adjusted to changing business conditions, both local and general; and these sales quotas at retail divided by the standard rate of stock-turn determined the standard stock at retail for each department. Each inspector carried with him a list of all the items stocked by the chain, and when he visited a store, he noted on this list the amount by which the store was over or under the standard stock for that item as determined by the department sales quota and the standard rate of stock-turn. Inspectors usually spent from two to three days at a time at each store. They had sole authority to authorize mark-downs and transfers of merchandise from one store to another. The inspectors made detailed reports to the merchandise office in New York in regard to conditions in each store visited. Physical inventory at retail was taken semi-annually by the store managers, subject to the instruction and supervision of the district inspector. No stock records were maintained in any of the departments of the individual stores. Figures in the main office of the company showed that the rate of stock-turn for the chain

as a whole had been between four and five times a year since the opening of the first stores in 1914.

For all but the small percentage of merchandise purchased locally, the store managers placed orders with the New York merchandise office. These orders were filled either from the warehouse or by direct shipment from manufacturers. Occasionally they were filled by the transfer of merchandise from a nearby store of the chain. It was a standard rule of the merchandise office that in case of departments which were overstocked, according to the most recent report of the district inspector, the store managers could not place orders aggregating more than 50% of the previous week's sales. Whenever an order was received which exceeded this limit, as determined from the weekly reports of the store managers and the reports of the store inspectors, the order was returned to the store manager with instructions to designate the items to be eliminated. At the insistence of the financial division, the merchandise office had made it a policy, whenever a department in any store was heavily stocked with merchandise which had not proved readily salable, as frequently happened in such items as hosiery and underwear where end sizes accumulated, that the store manager should not be permitted to order new or more readily salable merchandise for that department until he had unloaded his old stocks.

24. AZTEC COPPER COMPANY—NOTE ISSUE WHICH BORE THE RIGHT OF CONVERSION INTO COMMON STOCK

The Aztec Copper Company operated mines in the western part of the United States which produced copper, zinc, lead, gold, and silver. In January, 1916, interest rates were deemed favorable for a note issue of \$12,000,000, the purpose of which was to refund two former note issues. It was suggested to the officers that the notes be converted into common stock in the ratio of \$75 in notes for one share of common stock.

One of the issues to be refunded was \$10,000,000 of five-year, 6%, collateral trust gold notes of a subsidiary mining company, guaranteed by the parent mining corporation. These notes matured April 1, 1917. The other issue was \$4,000,000 of four-year, 5%, gold notes, which matured June 1, 1918. Both issues

were callable on any interest date. A notice of redemption on April 1, 1916, had been sent to the noteholders of both issues. By refunding the \$10,000,000 issue, \$1,350,000 in cash, which was held in escrow under the trust indenture as security for the notes, was released. Additional cash in the treasury allowed the payment of \$2,000,000 of outstanding notes. This reduction in principal effected a saving in annual interest charges.

The new issue of \$12,000,000 was to be dated February 1, 1916, and was to mature in 10 years. The notes were to bear 6% interest, and were an unsecured obligation of the corporation. They were callable as a whole, on any interest date, upon

AZTEC COPPER COMPANY—BALANCE SHEET AS OF DECEMBER 31, 1915

ASSETS

Cost of Properties.....	\$47,368,900.00
Improvements, Options and Other Deferred Charges	635,800.00
Discount on Gold Notes to Be Amortized.....	96,700.00
Ores, Etc., on Hand.....	1,287,200.00
Supplies, Fuel, and Timber.....	1,573,600.00
Metals in Transit, in Process, and on Hand.....	6,172,800.00
Notes Receivable.....	3,867,200.00
Accounts Receivable	1,959,700.00
Cash	2,482,800.00
	<hr/>
	\$65,444,700.00

LIABILITIES

Common Stock, par Value \$50 per Share.....	\$17,553,800.00
7% Preferred Stock.....	24,313,700.00
Capital Stock of Subsidiary Companies Not Held by Aztec Copper Company.....	1,029,700.00
5% Gold Notes.....	4,000,000.00
Accounts Payable and Accrued Pay-Roll.....	935,700.00
Drafts in Transit.....	712,300.00
Reserves for Freight, Refining, Selling Commission and Other Purposes.....	1,283,200.00
Dividends Declared (paid January 15, 1919).....	688,900.00
Depreciation and Reserve Funds.....	6,327,800.00
Undivided Surplus Applicable to Stocks of Sub- sidiary Companies Not Held by Aztec Copper Company	346,100.00
Profit and Loss Account Balance.....	8,253,500.00
	<hr/>
	\$65,444,700.00

60 days' notice, at 110 and accrued interest. The company had no mortgage debt nor bonds of any description outstanding. It was provided that no mortgage might be made subsequently by the company without equally securing these notes. The balance sheet on December 31, 1915, was as given on page 213.

The rate of dividends on common stock was not steady; declaration of the quarterly dividend payable January 15, 1916, was at the rate of 6%. The market price in January, 1916, was approximately 58. The yearly high and low prices and dividends paid for the six preceding years were as follows:

Year	High	Low	Dividend
1910.....	50	30	4%
1911.....	40	30	...
1912.....	50 $\frac{5}{8}$	34	4 $\frac{1}{2}$ %
1913.....	43 $\frac{1}{2}$	34	6%
1914.....	43 $\frac{1}{2}$	24 $\frac{1}{2}$	3%
1915.....	54	20	1 $\frac{1}{2}$ %

Net earnings for 1915 applicable to interest charges, after deduction of nearly \$800,000 for depreciation, improvements, and exploration, were \$7,400,000, or over 10 times the interest charges on the proposed issue. It was expected that the corporation could secure a price slightly in excess of par from bankers for these notes.

It was urged that the notes bear the conversion privilege because of the increased marketability afforded thereby; this feature made them attractive not only to investors who required sound security, but also to those who wished to secure a speculative gain. Noteholders could take advantage of the conversion privilege when the value of the common stock advanced. Bankers sometimes paid a higher price for the convertible securities since they appealed to a wider class of purchasers. An advantage to the company was that conversion of notes into common stock reduced fixed charges. It was desirable, moreover, to provide a means for converting the obligation of a noteholder, who was a creditor of the corporation, into that of a common stockholder, who was a partner. The company could not sell additional common stock to the public in order to secure capital because no dividends had been declared on the first three dividend dates in 1915.

It was suggested that little attractiveness to investors was

added by the conversion feature because purchasers of this type of security did not desire to speculate. If the privilege became valuable as the result of an increase in the price of the common stock, the price of the notes would advance proportionately, and the noteholders who were the original purchasers probably would take their profits by selling the notes on the open market, since they did not wish to hold common stock. The convertibility privilege might prove a disadvantage, also, because conservative investors might receive the impression that the addition of this feature was necessary in order to secure a favorable price for the notes. At the date of issue, this privilege would be worthless, because if the price of the notes to the public was a few points above par, a rise of approximately 20 points in the price of common stock was necessary before a conversion could be made on an even basis. Although the stock was highly speculative, the probability of a greater rise than this was remote. The officers did not consider a more liberal conversion ratio because of their confidence in the inherent value of the common stock.

The officers decided to add the conversion feature to the notes. The issue was sold to bankers at slightly above par, and offered to the public in February, 1916, at 103½. The notes were convertible into common stock at any time at the option of the holder on the proposed basis of \$75 in notes for each share. If the notes were called, they could be converted at any time prior to the date of payment.

25. GORDON, GILES & NORTHCRAFT—PURCHASE OF COMMON STOCKS IN APRIL, 1923

At a conference of the partners of Gordon, Giles & Northcraft, investment bankers, the question of buying common stocks during the spring and summer of 1923, was discussed. An offer of participation in selling a common stock issue of the Pawnee Mills demanded that the question receive immediate attention.

Two of the partners favored the continuance of the policy of the company in selling both stocks and bonds. They were of the opinion that conditions at the time indicated industrial prosperity. Their transactions in stocks, furthermore, had proved profitable, and they maintained that the elimination of their stock selling department would curtail their profits seriously. They

also brought out the fact that many of the company's customers preferred to buy speculative common stocks rather than conservative bonds and preferred stocks, and that the accounts of such customers might be lost if the firm ceased to sell common stocks.

The third partner, however, was emphatic in his opinion that common stocks should not be purchased during the coming spring and summer. His contention was that prices were rising; raw materials had advanced and wages had increased, especially in many of the textile mills. These increased prices meant increased costs of production and higher prices for the finished product, which would result in lessened demand. While sales of manufactured products at the time were satisfactory, he considered that conditions showed every sign of a minor boom which would not tax existing industrial facilities to the point where expansion would be justified.

In the opinion of this partner, the revival of industrial activity which, generally speaking, could have been said to have commenced in January, 1921, and which was still in progress in April, 1923, had been amply reflected in the prices of common stocks which had risen in accordance with this revival. However, in April, 1923, stock prices were halting, and indecision on the New York Stock Exchange indicated that the last 18 months' prosperity would result at least in temporary depression within the next 12 months. This decline in stock prices influenced the partner's forecast that there was little probability of increased dividends in the near future.

The immediate profits which would result to the firm from the sales of common stocks, at this time, would, he maintained, be more than offset as a result of ill will engendered if the stocks failed to earn satisfactory dividends. Hence, there was no justification in buying stocks at this time.

His arguments prevailed over those of his two partners, and the firm bought no common stock during the ensuing six months.

26. MAGRUDER KNITTING COMPANY—SALE OF COMMON STOCK TO FINANCE CONSOLIDATION WITH A HOSIERY MILL

The products of the Magruder Knitting Company consisted of underwear for men, women, and children in knitted and woven

MAGRUDER KNITTING COMPANY--BALANCE SHEET AS OF
MARCH 31, 1923

ASSETS	
Cash	\$ 653,000
Notes and Accounts Receivable, Less Reserve	1,564,000
Sundry Accounts Receivable	22,000
Due from Officers, Employees, Etc.	41,000
Notes, Deposits	30,000
Inventories	<u>4,133,000</u>
Total Current Assets	\$6,443,000
Prepaid Expense	30,000
Notes Receivable and Employees' Stock Subscriptions..	92,000
Investments	7,000
Property and Plant Less Depreciation.....	<u>1,802,000</u>
Total	<u>\$8,374,000</u>
LIABILITIES	
Notes Payable (Bankers and Brokers)....	\$1,930,000
Notes Payable (Individuals)	84,000
Accounts Payable	501,000
Sundry Accounts	139,000
Taxes	<u>133,000</u>
Total Current Liabilities	\$2,787,000
Miscellaneous Receipts	22,000
7% Preferred Stock	800,000
Common Stock and Surplus	<u>4,765,000</u>
Total	<u>\$8,374,000</u>

fabrics, made from cotton, wool, silk, and from combinations of these fibers. Sales were made directly to retailers throughout the United States. The president of the company was of the opinion that selling costs could be lowered by consolidation with another mill, the products of which could be sold by the company's sales force. It was necessary, however, that the mill with which consolidation was to be effected have an established reputation, that its product be of high quality, and that a demand already exist for the product. Above all, the method of distribution had to be similar to that of the Magruder Knitting Company. These conditions apparently were fulfilled by the Irving Hosiery Mills, which sold a complete assortment of full-fashioned and seamless hosiery directly to retailers. Negotiations with the

principal stockholders of the Irving Hosiery Mills in April, 1923, disclosed that it was possible to effect consolidation. The officers had to decide whether or not the consolidation was advisable, and, if it was made, how it should be financed.

The Magruder Knitting Company was established as a partnership in 1886; the following year a corporation by the same name was formed with a paid in capital of \$75,000. From the year 1895, growth was continuous. Expansion was financed from earnings with the exception of the sale of \$1,500,000 of preferred stock to the public in 1912. The company had distributed underwear more widely than its competitors. Sales in 1922 amounted to over \$9,000,000. Carefully planned national advertising had established the brand name "Magruder," for which a steady consumer demand existed.

The financial condition of the company on March 31, 1923, was as shown in the balance sheet on the preceding page.

The record of net profits since 1917, after deduction of taxes at the 1922 rate, was as follows:

1917.....	\$308,000	1920.....	\$275,000
1918.....	919,000	1921.....	418,000*
1919.....	935,000	1922.....	16,000

*Loss.

The Irving Hosiery Mills was incorporated in 1891 and produced hosiery from cotton, wool, silk, and combinations thereof. It was a pioneer in the industry and had shown a constant growth. A reputation for high and dependable quality was established. The product was sold directly to retailers under a nationally advertised brand name. Sales in 1922 were \$4,000,000. The balance sheet on March 31, 1923, was as shown on page 219.

The net profits of the Irving Hosiery Mills, after taxes at the 1922 rate, were as follows:

1917	\$311,000	1920.....	\$1,054,000
1918	410,000	1921.....	86,000
1919	675,000	1922.....	203,000

In an alliance with the Irving Hosiery Mills, the president of the Magruder Knitting Company saw an opportunity to lower the cost of distribution. In unit stores, underwear and hosiery were combined in one department under the direction of a single buyer. The Magruder Knitting Company's sales force could

IRVING HOSIERY MILLS—BALANCE SHEET AS OF MARCH 31, 1923

ASSETS	
Cash	\$ 9,000
United States Securities	143,000
Notes and Accounts Receivable	796,000
Sundry Accounts Receivable	5,000
Notes, Deposits	23,000
Inventories	<u>2,543,000</u>
Total Current Assets	\$3,519,000
Property Expense	22,000
Advances on Purchase of Equipment	17,000
Property and Plant	<u>1,075,000</u>
Total	\$4,633,000

LIABILITIES	
Notes Payable (Bankers and Brokers)	\$ 667,000
Notes Payable (Individuals)	1,000
Trade Acceptances	49,000
Accounts Payable	248,000
Accrued	189,000
Due to Subsidiary	232,000
Taxes	<u>49,000</u>
Total Current Liabilities	\$1,435,000
6% Preferred Stock	600,000
Common Stock and Surplus	<u>2,598,000</u>
Total	\$4,633,000

distribute both products at approximately the same cost, with the result that selling expense for each company was reduced one-half. Irving hosiery was an ideal addition to the underwear products because it always had been sold directly to retailers and was a well-known brand which had a reputation for reliable quality. Neither product detracted from the prestige of the other, and an alliance of the two was expected to strengthen the reputation of each. It was not necessary to increase selling expenses for the new product, because of its wide distribution. The two sales forces could be combined and the least satisfactory salesmen in each eliminated.

A consolidation of the two companies allowed economies in management expense by a combination of the executives of the two organizations. The most modern methods of production had not been introduced in the plant of the Irving Hosiery Mills,

and an estimate was made that production could be increased by 20% without an increase in fixed charges. A further saving was possible by reduction of the number of lines manufactured, of which there were 130. The volume of sales and assets of the Irving Hosiery Mills was so small in comparison with that of the Magruder Knitting Company that the latter would not be overbalanced by the consolidation.

A complete consolidation, however, was not possible. Centralized control of production was impracticable because the plants of the two companies were 400 miles apart and the processes of manufacture were different. No significant economies in purchase of raw materials could be secured, for although the same materials were used, they were required in different forms for the two products. The difficulty which existed in a combination of the two selling organizations was that the salesmen were not familiar with the selling points of the product which was added. It would be more difficult for them to overcome sales resistance in a product about which they had little knowledge.

The president of the Magruder Knitting Company decided that the saving to be secured in selling expense made the consolidation advisable. After negotiations, in which was secured the consent of the majority of stockholders of the Irving Hosiery Mills, a method of financing had to be determined.

It was decided to form a holding company to own the stock of the two companies. Because a minority of 5% to 10% of the Irving Hosiery Mills common stock could not be purchased or exchanged, the assimilation of the Irving Hosiery Mills as a subsidiary was prevented. Since these minority stockholders were antagonistic to the purchase, the Magruder Knitting Company might be hampered by them in its control of the subsidiary company. An additional advantage of a holding company was to insure that the identity of the two corporations be maintained. The brands used were formed from the companies' names, and if the Irving Hosiery Mills had become a subsidiary of the Magruder Knitting Company, the latter name might have been used by customers and the public to designate both companies and their products.

A sale of securities of the holding company to the public was necessary in order to raise funds to purchase a portion of the Irving Hosiery Mills common stock and to provide additional

working capital. An issue of bonds did not receive consideration because earnings were sufficient to warrant the sale of stock. The question arose whether preferred or common stock should be sold. Preferred stock had the advantage of a fixed rate of dividends which prevented sharing benefits of an increase in earnings with the public. It was a sound investment to offer because no bonds on any of the properties existed. The dividends were a first charge on the earnings of the holding company, which owned the entire common stock of the Magruder Knitting Company and more than 90% of the stock of the Irving Hosiery Mills. The bankers who were to buy the security for resale to the public, however, objected because the time was not propitious for the sale of preferred stock. New issues had been sold frequently during the preceding months and the investors who purchased them were well supplied. Preferred stocks of sound security were selling at an unusually low price, and it was believed that the company could not receive a fair price for the stock. Although the two outstanding issues of preferred stock were comparatively small, as shown on the balance sheets of the two companies, they had to be called at a premium for refunding. One of the most serious objections against preferred stock was the fact that the holding company did not control the entire amount of the Irving Hosiery Mills common stock. Complete ownership was desirable, the bankers declared, in order to provide unquestioned security for the issue.

The alternative to preferred stock was common stock. In the opinion of the bankers, the market was more favorable for common than for preferred stock, and for this reason, a higher relative price could be secured. Lack of complete ownership of one company had little effect on the value of this kind of stock. Although profits were to be shared with the public, no obligation existed to pay a fixed rate; dividends depended upon earnings. It was recommended that the holding company be incorporated with a capital of 200,000 shares of no-par-value common stock. In order to raise \$3,600,000, which was the required amount, 90,000 shares had to be sold to the public. Thus, 45% of the voting power was taken away from those who were interested immediately in the welfare of the corporations. This was the most serious objection to common stock, since it required those who managed the Magruder Knitting Company, and were the

most important stockholders, to sell a portion of their holdings.

In order to raise the money by the most advantageous means, the officers decided to sell common stock. The issue was offered to the public in May, 1923, at \$42 per share.

27. DORMAN ELECTRIC COMPANY—TIME OF REDEMPTION OF HIGH INTEREST BEARING CONVERTIBLE NOTES

The Dorman Electric Company, a manufacturer of electrical equipment, issued \$20,000,000 of five-year 7% notes on April 1, 1920. These notes were convertible, par for par, into preferred stock after April 1, 1922, and were redeemable at 102 and interest at 30 days' notice after April 1, 1922, and on or before April 1, 1923, on any interest date, and thereafter at 101 and interest to October 1, 1924. The net earnings of the company had averaged three times the interest charges on the total funded debt during the five years previous to 1920. On April 1, 1922, there was no preferred stock outstanding, although a \$40,000,000 issue bearing 7% cumulative dividends had been authorized, half of which was to take care of possible conversions of the notes. Between April 1 and April 30, 1922, more than \$2,500,000 of the 7% notes were converted into the new preferred stock.

Long-term interest rates had been going down since 1920 and had declined during the first six months of 1922 to such an extent that in July, 1922, the company deemed it advisable to redeem its 7% notes in order to relieve itself of this high interest bearing obligation and to prepare the way for further financing. The question arose whether the redemption should be carried out as of October 1, 1922, or whether it was preferable to postpone the operation until the following April, 1923.

The outstanding preferred stock, which had been exchanged for notes after April 1, 1923, was quoted in the market during July on about a 6.45% basis, or at about 108½.¹ Because of the con-

¹ The investment standing of the preferred stock of the Dorman Electric Company is shown by a comparison with the following yield bases on which six high-grade preferred stocks were selling in July, 1922:

	Yield Basis
United States Steel 7% Preferred.....	5 8%
American Car and Foundry 7% Preferred.....	5.85%
Standard Oil Company of New Jersey 7% Preferred.....	6.0%
American Locomotive 7% Preferred.....	6 0%
Atchison, Topeka, and Santa Fe 5% Preferred.....	4.95%
Union Pacific 4% Preferred.....	5.3%

vertible feature the notes had been selling at about 108½ since April, 1922. If they were redeemed as of October 1, 1922, at 102, the redemption would be on a 6½% basis. A redemption on April 1, 1923, would be on a 5.93% basis. Since the notes were selling so far above the callable price and because of the fact that so many had been converted during the first month of the conversion privilege, it seemed likely that the announcement of redemption of the notes might bring about a conversion of a large part of the issue. No alert investor would want to take 102 for his notes when he could convert them into preferred stock worth more than 108.

On the assumption that a total of at least three-quarters of the original issue, or about \$15,000,000, was likely to be converted, the redemption of the notes involved the payment of a maximum premium of \$100,000, or of a total maximum amount, including principal, of \$15,100,000. The result was a permanent cost to the company of 7% per annum on \$15,000,000 of preferred stock as well as an extra cost of \$100,000 for a 2% premium on the notes redeemed. The funded debt was changed, however, in so far as the issue was converted, into a non-voting capital stock, and the company's financial status thus was improved. A redemption in a period which was conducive to the conversion of a maximum portion of the notes was accompanied, therefore, by the greatest gain to the company, since there was a minimum number actually to be redeemed and a minimum cost resulting from the payment of the 2% premium.

If redemption of the notes was to take place on April 1, 1923, there were nearly nine months remaining in which investors could convert their notes into preferred stock. It was possible that a larger number might convert their holdings if they were given this length of time to exercise their conversion privilege than if the conversion period were reduced to three months by an earlier redemption of the notes. Those investors who were alert in regard to their investments might be expected to take advantage of the convertibility of their notes as soon as possible under any circumstances. Conversions by others who were less watchful of their investments probably could be hastened by the calling of the notes, but more of them were likely to exercise their privilege if they were allowed a longer time.

The executives, on the other hand, foresaw the possibility of

lower stock prices during 1923 than during the latter part of 1922. If, therefore, the preferred stock of the company began gradually to decline, there was less encouragement to conversion, and to this extent the rate of conversions was likely to decrease. For this reason it seemed probable that a larger number of investors could be induced to convert their notes into preferred stock by the redemption of the notes in the fall while the preferred stock was selling at an attractive price. The company did not wish to postpone the redemption until October 1, 1923, although the call price on and after this date was only 101, because it was impossible to forecast the movements of the stock market so far in advance, and because the notes were likely to hinder further financing that might be necessary before that time.

The company decided, accordingly, to call the notes for redemption on October 1, 1922. The conversion privilege, by the terms of the indenture, extended to 10 days prior to redemption. By this time approximately \$17,000,000, or more than 80% of the notes, had been converted into preferred stock, which left \$3,000,000 to be redeemed by the company at 102.

28. GOODYEAR TIRE & RUBBER COMPANY—READJUSTMENT OF OWNERSHIP, 1919-1923

A. ISSUE OF PREFERRED STOCK, OCTOBER, 1919

The Goodyear Tire & Rubber Company 7% Cumulative Preferred Stock. Preferred as to both assets and dividends. Redeemable as a whole or in part at 110 and accrued dividends on 30 days' notice.

An annual sinking fund of 2½% of the total amount issued provides for retirement up to the redemption price.

Dividends payable quarterly January, April, July, and October 1. Par value \$100. Total authorized \$100,000,000.

Tax exempt in Ohio and exempt from normal federal income tax.

Subject to approval of stockholders, we offer for subscription, subject to allotment, such of this stock as may not be taken up by present stockholders and employees, when, as and if issued and received by us, and subject to approval of counsel. Price \$100 and accrued dividend.

A letter from the president of the company appears on the following pages:

AKRON, OHIO, October 20, 1919

Messrs. Black & Black, Cleveland, Ohio
The Third Trust & Savings Company, Cleveland, Ohio
Messrs. P. G. Bassett & Company, Chicago, Ill.
Messrs. W. A. Smith & Company, New York City

GENTLEMEN:

In compliance with your request, I take pleasure in giving you the following information concerning the new issue of \$40,000,000 7% Preferred Stock of The Goodyear Tire & Rubber Company and the business of the company.

HISTORY AND BUSINESS

The Goodyear Tire & Rubber Company was incorporated in 1898 under the laws of the State of Ohio. It is the largest manufacturer of tires in the world, producing at present approximately 20% of the total automobile tire business of the country. Besides automobile tires it manufactures motor truck tires and solid tires for carriages and cabs and its mechanical department, among other products, produces a complete line of hose, belting, packing and molded goods. The company has developed Neolin, a new material particularly adapted for soles for shoes, which eastern shoe manufacturers have adopted, and is producing over 100,000 soles and heels per day. It also manufactures Spherical Military Kite and Dirigible Types of balloons, balloon fabric and accessories. Goodyear products are distributed through 72 branches in the United States, and before the war had branches or agencies in most of the important business centers of the world. The company controls through stock ownership The Goodyear Tire & Rubber Company of Canada, Limited, which has 10 branches in the Dominion and ranks first in the production of tires. It also owns the entire Common Capital Stock of The Goodyear Tire & Rubber Company of California, which is now erecting a plant with a capacity of 7,500 tires per day. The company has assured itself of an independent position in regard to the principal raw materials used in the manufacture of tires and rubber goods by ownership of various companies producing rubber and cotton and cotton fabrics. These include The Goodyear Cotton Mills Company, Goodyear, Connecticut, including ownership of the town site; The Southwest Cotton Company, Phoenix, Arizona, including ownership in fee of 24,000 acres of land and 5 ginning plants of 110 stands; The Goodyear Orient Company, with ownership of 18,000 acres of land in Sumatra, planted to rubber also The Pacific Cotton Mills Company of Los Angeles, California, with a plant capacity of 33,000 spindles.

PLANT

The company owns 150 acres of real estate in Akron and vicinity,

**GOODYEAR TIRE & RUBBER COMPANY—BALANCE SHEET
AS OF AUGUST 31, 1919**

ASSETS			
Plant as per Books:			
Real Estate and Buildings.	\$17,097,367.56		
Machinery and Fixtures.	<u>16,000,466.40</u>	\$33,097,833.96	
Patents, Trade-Marks, Designs, etc.			1.00
Securities Owned (exclusive of U. S. Liberty Bonds) Book Values			4,300,052.44
Preferred Stock Purchased and Held in Treasury:			
1st Pr'f'd 9,691 Shares par val. \$969,100	927,931.69		
2d Pr'f'd 13,181 Shares par val. 1,318,100	<u>1,251,737.16</u>	2,179,668.85	
Notes Receivable of Officers and Employees for Capital Stock, Secured by Such Stock.			1,268,947.60
Employees' Subscription for Second Preferred Stock (Balance Unpaid) .			76,226.69
Inventory and Current Assets:			
Inventory.	\$38,403,928.51		
Accounts and Notes Receivable (Provisions in Reserve for Doubtful Items \$231,445.30—See Contra)	24,080,634.49		
Advance to Agents, Salesmen and Companies.	7,827,482.46		
Cash on Deposit and on Hand.	4,538,937.57		
U. S. Liberty Bonds	<u>2,068,320.00</u>		78,419,303.03
Advance to Goodyear Improvement Company and to the Goodyear Heights Co.			3,921,190.63
Suspended Assets: (Provision in Reserve for Doubtful Items—See Contra)			176,183.27
Prepaid Rentals, Interest, Insurance, etc			<u>1,021,394.24</u>
			\$125,450,801.71

and its factories, fronting on one of the principal thoroughfares of the city, have a combined floor area of about 100 acres. The plant has an independent and adequate water supply and is connected by the Belt Line or direct sidings with the freight service of the Pennsylvania, New York Central, Erie, Baltimore & Ohio, and A. C. & V. Railroads. In the manufacture and distribution of its products, the Company employs over 43,000 people, of which over 26,000 are employed in Akron.

PURPOSE OF ISSUE

One year ago, due to the restriction of the Government and conditions growing out of the war, we were employing approximately 14,000 men, making at the low point in our production (November) less than 11,000 tires per day, with a volume of business approximating \$8,000,000 per month.

Since the close of the war, with restriction and control removed, we have rapidly rebuilt our organization until now we are employing 26,000 men in Akron, making in excess of 30,000 tires per day and our business

GOODWEAR TIRE & RUBBER COMPANY—BALANCE SHEET
AS OF AUGUST 31, 1919

CAPITAL AND LIABILITIES

Capital Stock (Par Value \$100 per Share)	
First Pref'd (7% Cumulative):	
Authorized and Issued	\$25,000,000.00
Less Redeemed	1,216,200.00
Second Pref'd (8% Cumulative):	
Authorized \$25,000,000	
Issued	\$14,442,700.00
Reserved for Issue to Employees on Partial Payment Subscriptions	382,500.00
Common:	
Authorized	\$50,000,000
Issued	20,731,100.00
Current Liabilities:	
Notes Payable	\$21,100,800.00
Purchase Accounts Payable	3,644,322.82
Balance Unpaid for U. S. Liberty Loan Bonds	1,120,000.00
Sundry Other Accounts Payable	2,877,828.42
Accrued Dividends:	
1st Preferred	277,477.67
and Preferred	96,284.66
Income and Excess Profits Tax Balance Unpaid	2,745,804.53
	31,862,518.10
Reserves:	
For Doubtful Accounts (Current—See Contra)	\$ 231,445.30
For Doubtful Accounts (Suspended Assets—See Contra)	176,183.27
For Insurance on Branch Stocks	91,335.82
For Industrial Compensation	20,276.64
For Depreciation on Plant	6,661,379.87
	7,180,620.90
Surplus	27,067,562.71
	<u>\$125,450,801.71</u>

Subject to a Contingent Liability for Endorsement of Notes Receivable Discounted amounting to \$549,153.41.

for this month will approximate \$20,000,000 in volume. Notwithstanding this large increase in volume, we have not been able to produce in excess of 70% of our sales requirements.

In order to provide for the assured growth of the business, the company has decided to retire its two present Preferred Stock issues and to authorize a new issue of 7% Preferred Stock (subject to approval by the stockholders at a meeting called for November 17, 1919). This issue will be limited to a total amount of \$100,000,000, of which \$40,000,000 will be used, so far as necessary, to retire by exchange or redemption the two Preferred issues now outstanding.¹

¹These were an issue of First Preferred (7% Cumulative) first offered in April, 1916, at 105, additional blocks having been sold from time to time; and an issue of Second Preferred (8% Cumulative) offered at par in February, 1918. The First Preferred was redeemable at will by the company at 112; the latter at 105.

DESCRIPTION OF ISSUE

The new issue of Preferred Stock will be protected by the following restrictions and covenants:

Preferred as to assets and dividends over the Common Stock. Dividends at the rate of 7%, payable quarterly on the first of January, April, July, and October. Redeemable in whole or in part at 110 and accrued dividend on 30 days' notice.

No mortgage or lien shall be placed on the real estate, plants, or equipment of the company, nor shall any bonds, notes, debentures or other similar evidences of indebtedness maturing later than three years from the date of issue be created or guaranteed, nor shall additional Preferred Stock having parity with or preference over this Preferred Stock be authorized or issued in excess of the authorized issue of \$100,000,000 without the consent of 75% in amount of the Preferred Stock outstanding.

The company shall maintain at all times net tangible assets of not less than 200% and net current assets of not less than 110% of the par value of the Preferred Stock outstanding.

During the 12 months ending November 1, 1921, and during each 12 months thereafter, the company will redeem 2½% of the largest amount of Preferred Stock at any time issued, whether or not outstanding, either through purchase in open market up to 110 and dividend or by call at that price.

No additional shares of the authorized Preferred Stock shall be issued unless and until net current assets are equivalent to at least 110% and total net tangible assets to at least 200% of the par value of the Preferred Stock outstanding, plus that about to be issued.

In case of and during default in any of the covenants of the Preferred Stock no dividends shall be paid on the Common Stock of the company, and in case of and during default in dividends or redemption of Preferred Stock the proposed Preferred Stock as a class shall have voting power equal to the Common Stock as a class.

SALES AND EARNINGS

Since its incorporation in 1898 the company's business has shown steady growth. In 1908 the *sales* were \$2,189,000. For 1919 they will approximate \$165,000,000. In 1908 the *net earnings* were \$120,925. In 1918 net earnings, subject to federal taxes, were in excess of \$15,000,000 and an estimate based on 11 months' operation indicates net earnings for the fiscal year ending October 31, 1919, in excess of \$20,000,000, or more than seven times the dividend requirements of the new Preferred Stock.

The great growth of the company's business has been financed out of earnings and sales of stock. In the last 12 years the company has earned net income of \$73,476,879.69 and has paid out in cash dividends \$20,540,178.52 so that over \$52,000,000 has been reinvested in the business out of earnings.

**COMPARATIVE STATEMENT OF SALES, NET EARNINGS, AND
PREFERRED STOCK DIVIDENDS**

Year	Sales	Net Earnings	Preferred Stock Dividends
1908	\$ 2,180,749.49	\$ 120,925.26	\$ 10,308.00
1909	4,277,067.06	651,687.49	17,619.02
1910	9,560,144.02	1,406,104.69	43,033.84
1911	13,262,265.63	1,291,624.66	70,000.00
1912	25,232,207.03	3,001,294.71	139,604.65
1913	32,098,827.25	2,041,268.08	350,000.00
1914	31,056,120.31	3,301,165.16	431,666.07
1915	36,490,651.64	5,137,082.69	469,583.33
1916	63,050,390.52	7,003,330.00	764,239.28
1917	111,450,643.74	14,044,206.10	1,400,030.67
1918	131,247,382.45	15,388,190.74	1,693,328.01
1919	165,000,000.00†	*20,000,000.00†	2,778,530.74

*Before deduction of Federal Taxes.

†Estimated

The growth and stability of our business is perhaps best shown by the comparative statement of the sales, net earnings, and Preferred Stock dividends as shown by the table on this page.

BALANCE SHEET

The condensed balance sheet shown on pages 226 and 227 is taken from our books and sets forth the financial condition of the company as of August 31, 1919.

It will be noted that the company has no bonds outstanding.¹

Upon completion of the present financing the Total Net Assets of the company will be in excess of \$86,000,000 and the Total Net Current Assets of the company will be in excess of \$47,000,000.

GENERAL

It has been the constant endeavor of The Goodyear Tire & Rubber Company to maintain permanent friendly relations with its employees through providing adequate wage scales, through considerate treatment of their relations with the management, through a constant improvement in working conditions and by providing adequate facilities for recreation.

Several thousand employees are owners of either Preferred or Common Stock in the company.

The company has built and sold to employees, at cost, 1,200 homes on Goodyear Heights and contemplates building 1,000 more.

The outlook for the company's business has never been brighter. With the expanding use of the motor truck, the opening of the markets of the world following this war, with the broader use of rubber through inventions of new articles and as a substitute for other materials, steady expansion of this industry is assured for years to come.

¹No bonds had been outstanding since 1908 when an issue of \$220,400 had been paid off.

GOODYEAR TIRE & RUBBER COMPANY—BALANCE SHEET, APRIL 30, 1920

ASSETS		
Plant and Property:		
Real Estate, Buildings, Machinery and Other Equipment	.....	\$ 47,898,160.38
Patents, Trade-Marks, Designs, etc.	.....	1.00
Securities Owned	.....	11,217,931.75
Preferred Stock Purchased and Held in Treasury	.....	402,268.88
Notes Receivable of Officers and Employees for Capital Stock Secured by Such Stock	.....	1,250,087.26
Employees' Subscriptions for Preferred Stock Balance Unpaid	.....	3,830,058.67
Inventory and Current Assets:		
Inventory	.....	\$62,537,271.54
Accounts, Notes and Acceptances Receivable	34,775,652.06	
Advances to Salesmen, Subsidiaries and Sun-dry Debtors	10,811,101.98	
Cash on Deposit and on Hand	3,046,621.30	
Total Inventory and Current Assets	.....	111,170,646.88
Advance to Goodyear Improvement Company and the Goodyear Heights Realty Company	.....	2,893,369.45
Suspended Assets:		
Provision in Reserve for Doubtful Items (See Contra)	.....	183,987.07
Prepaid Rentals, Interest, Insurance, etc.	.....	1,394,228.45
		\$180,240,739.79

The year 1920 promises to be the largest in both volume of business and profits of any in our history.

Yours very truly,

....., President.

B. NEW OFFERING, PREFERRED AND COMMON STOCKS, JUNE, 1920

\$20,000,000 Par Value $7\frac{1}{2}$ Cumulative Preferred Stock—Par Value \$100.

\$10,000,000 Par Value Common Stock—Par Value \$100.

Offered in block of three shares (two shares preferred and one share common) for \$300.

CAPITALIZATION

Reflecting capitalization of a portion of the surplus by recent declaration of stock dividend of 150%, but without giving effect to present financing.

Issue	Authorized	Outstanding
7% Cumulative Preferred Stock	\$100,000,000	\$46,844,100
Common Stock	100,000,000	51,890,000

GOODYEAR TIRE & RUBBER COMPANY—BALANCE SHEET, APRIL 30, 1920

CAPITAL AND LIABILITIES

Capital Stock (Par Value \$100.00 per Share):	
1st Preferred (7% Cumulative):	
Authorized	\$100,000,000.00
Issued	46,844,100.00
Reserved for Issue to Employees or Partial Payment Subscription	5,285,100.00
\$52,129,200.00	
Common:	
Authorized	\$100,000,000.00
Issued	20,758,400.00
Total Capital Stock.....	\$ 72,887,600.00
Current Liabilities:	
Notes Payable	\$32,023,798.00
Purchase Accounts and Acceptances Payable 18,866,981.75	
Sundry Other Accounts Payable.....	4,485,764.66
Accrued Preferred Dividends due July 1, 1920	273,751.92
Total Current Liabilities.....	55,650,296.33
Reserves:	
For Doubtful Accounts (Current, see Contra)	\$ 183,987.07
For Doubtful Accounts (Suspended Assets)	231,445.30
For Industrial Compensation.....	62,051.59
For Pensions	99,181.27
For Insurance on Branch Stocks.....	139,335.82
For Depreciation of Plant and Equipment..	8,137,060.71
Total Reserves	8,853,061.76
Surplus as of April 30, 1920.....	42,849,781.70
(Subject to Federal Taxes)	
	\$180,240,739.79

Tax exempt in Ohio and exempt from normal federal tax.

The usual letter from the president of the company (dated June 5, 1920) accompanying this offer of stock indicated that the purpose of the financing was to provide additional working capital for carrying the increased inventory of finished goods and raw material, which had been made necessary by transportation difficulties and other current business conditions. The letter showed that total sales for the year ended October 31, 1919 (estimated at \$165,000,000 early in October when the original offering of preferred had been made) had been \$168,914,982.83 while net earnings (before deduction of federal taxes) had been \$23,227,-245.29. Total sales for the year ended October 31, 1920, were estimated at \$225,000,000 and net earnings at \$30,000,000, (before tax reduction). The letter closed with the statement: "The year 1920 will be the largest in both volume of business and profits of any in our history." The balance sheet on pages 230 and 231

sets forth the financial condition of the company as of April 30, 1920. As shown by the balance sheet the total net assets were in excess of \$115,000,000 and total net current assets were in excess of \$55,000,000.

C. THE COMPANY IN DISTRESS, 1920-1921

Late in October, 1920, the market letter published by an investment banking house which had participated in the sale of the foregoing issues intimated that the extraordinary conditions prevailing, especially in the rubber industry, might interfere temporarily with the payment of the dividend on the common stock of the Goodyear Tire and Rubber Company; and the *Commercial and Financial Chronicle*, on November 6, 1920, contained an announcement by a group of banking houses that arrangements had been concluded, subject to execution of formal papers, under which the company would receive (either by renewal of maturing loans, or by the extension of new bank credits) a total credit of \$28,800,000, payable February 15, 1921. It was also announced that careful study was being made to determine what permanent financing, if any, might be necessary for the company, though it was not expected that an announcement in this connection would be made for some time.¹ Two weeks later the *Chronicle* noted that the company had passed the dividend on the common stock because of existing financial and business conditions and in order to conserve its cash resources.² The preferred dividend scheduled for January 1, 1921, was also passed.³

The official reorganization plan of February 1, 1921, showed the company's financial position as given on the opposite page.

¹ *Commercial and Financial Chronicle*, vol. III, p. 1,856.

² *Ibid.*, p. 2,047.

³ A circular to the preferred stockholders, dated December 31, 1920, said in substance:

"The disappointment of the preferred stockholders in not receiving the quarterly dividend, due January 1, 1921, is no greater than that of your board in not being able to pay the same on that date.

"The plans for the refinancing of our company, which we expected to have fully completed at the time of the first adjournment of the special meeting of the stockholders, are not yet fully consummated. Until these plans have been completed and the present impairment of the company's capital as shown by the audit made as of October 31, 1920, and which was presented to the special meeting on December 24, 1920, has been restored, the company would have no legal right to pay this dividend even though it had at present funds to do so.

"Our creditors, both bank and merchandise, have thus far treated us with the greatest consideration in the matter of extending the time of payment of

1 Present Debt (exclusive of interest):

Bank Debt:

(a) Secured Loan Pursuant to Agreement of November 3, 1920, with the Waddill Catching's Committee	\$18,825,000
(b) Other Obligations, for Most Part Secured or Partially Secured by Rubber to Be Used in Company's Current Operations.....	13,954,000
(c) Unsecured Notes and Commercial Paper... Other Secured Notes Payable.....	12,202,500 467,830
Bills Receivable Discounted by the Company	1,970,000

Merchandise Debt:

Trade Acceptances	\$4,028,981
Notes Payable ..	238,033
Accounts Payable	8,038,000 12,305,104
Back Taxes	4,387,026
Preferred Stock Subscription of Employees to Be Refunded.....	318,701
Other Miscellaneous Indebtedness.....	413,573
Other (contingent) Obligations (estimated)....	2,120,556 \$ 65,969,290

2 Present Commitments for Future Deliveries of Merchandise on Which Specifications and Prices Have Been Fixed (Company's figures).

(a) Rubber	\$ 7,200,740
(b) Cotton.	5,664,000
(c) Fabric	41,879,763
(d) Other Materials	215,000 54,959,503

3. Depreciation on Such Commitments Not Written Off 18,247,000

4. Approximate Present Capitalization, as Reported by Company:

7% Preferred Stock	\$65,000,000
Common Stock	61,000,000 \$126,000,000

Treating the capital stock as a liability at its par value, the estimated (profit and loss) deficit on December 31, 1920, exclusive of loss upon commitments for merchandise not yet delivered, was approximately \$24,400,000; adding to this the depreciation item \$18,247,000, as estimated above, gave a total of \$42,647,000.

The plan of readjustment provided that the existing deficit be written off and that 25% of the company's liabilities upon merchandise commitments, on which specifications and prices had been fixed, be funded by changing the existing common stock into an equal number of shares of common stock, either without par their claims against the company, and, of course, it goes without saying, the company's first duty is to make satisfactory arrangements with its creditors before any dividends are paid to the stockholders.

"These dividends, you understand, are cumulative and when payments are resumed, all dividends in arrears on preferred stock will have to be paid before any dividend is paid to the common stockholders.

"Your directors are taking steps to readjust the company's operations and expenses so as to conform to present business conditions. Every reasonable economy will be exercised in the conduct of its affairs. We hope to announce in the very near future the completion of the plans now under way for the company's financing."

value or with an appropriate lower par value, and by an issue of prior preference stock.¹

D. REORGANIZATION FINANCING, 1921-1923

I. \$30,000,000 FIRST MORTGAGE BONDS (APRIL, 1921)

First Mortgage 20-Year 8% Sinking Fund Gold Bonds. Dated May 1, 1921. Due May 1, 1941.

Total authorized, \$30,000,000. Interest payable May 1 and November 1. Coupon bonds of \$1,000, \$500, and \$100, interchangeable, with provision for registration of principal. Principal and interest payable in New York and Cleveland. Redeemable as a whole, or in part for the sinking fund, on any interest date at 120 and interest. The company agrees to refund the present Pennsylvania 4-mill tax to holders resident in Pennsylvania who have paid such tax.

Application will be made in due course to list on the New York Stock Exchange. The Union Trust Company, Cleveland, Ohio, Trustee.

The mortgage will provide for the retirement of the entire issue at 120 and interest, by drawing by lot \$750,000 bonds on each interest date, beginning November 1, 1921. Price: 99 and accrued interest.

The balance sheet of the company as of February 28, 1921, adjusted to show the effects of the financing, prepared by Messrs. Price, Waterhouse & Company, is shown on pages 236 and 237.

As of October 31, 1920, inventories had been written down to market values by deduction from net income for the year of \$9,970,000. Subsequently a further sum of \$8,850,000 was written off, and provision made, amounting to \$24,000,000, for possible loss on raw materials under contract but not received, so that crude rubber on hand and to be received was carried at 20 cents per pound, and fabric at current market values.

Provision for control of the management of the company during the life of the bonds was made through vesting the right to elect a majority of the board of directors in Messrs. Clarence Dillon, of Dillon, Read & Company; John Sherwin, chairman of the board of The Union Trust Company, Cleveland, and Owen

¹ *Commercial and Financial Chronicle*, vol. 112, p. 656. The details of the proposed reorganization are given on page 657.

D. Young, vice-president of the General Electric Company, or their successors, either through management stock or a voting trust.

II. \$27,500,000 SINKING FUND BONDS (NOVEMBER, 1921)

Ten-Year 8% Sinking Fund Gold Debenture Bonds. Dated May 1, 1921, due May 1, 1931.

Total authorized \$30,000,000. Interest payable February 1 and August 1. Coupon bonds of \$1,000, \$500, and \$100; registerable as to principal. Principal and interest payable in New York at the office or agency of the company. Redeemable as a whole, or in part for the sinking fund, at any time after May 1, 1922, on 30 days' notice at 110 and interest. The company agrees to refund the present Pennsylvania 4-mill tax to holders resident in Pennsylvania who have paid such tax.

Application will be made in due course to list on the New York Stock Exchange. Central Union Trust Company of New York, Trustee.

The Trust Indenture provides for the retirement of the entire issue either through operation of a cumulative sinking fund to purchase up to 110 and interest or to call at that price, or by payment at maturity at 110 and interest. Price: 99½ and accrued interest.

Concerning the outlook the president of the company said:

"The company has, within the past year, accomplished more in the improvement of the quality and longevity of its tires than during the preceding two years. Its present product is far superior to the best tires heretofore manufactured by the company, and the recognition of this fact by the consumer will undoubtedly lead to a marked increase in the proportion of the total tire business which will be done by the company. The company now has approximately 33,000 automobile tire service stations against 17,000 at the beginning of the 1920 season.

"With net tangible assets of approximately \$137,000,000, with net quick assets of over \$60,000,000, the company is in an exceptionally strong position, and looks forward with full confidence to a future of steadily expanding and profitable business."

**GOODYEAR TIRE & RUBBER COMPANY—BALANCE SHEET
AS OF FEBRUARY 28, 1921**

ASSETS			
Property Accounts:			
Land, Building, Machinery, Equipment, etc., at Akron	\$58,306,088.21		
Less—Depreciation	<u>11,329,018.04</u>	\$47,066,170.17	
Purchase and Development of Rubber Plantation in Sumatra.		5,489,828.37	
Equipment, Fixtures, and Furniture at Branches and Automobiles (at depreciated valuations)		<u>1,606,051.74</u>	\$ 54,252,050.28
Investments in and Advances to Subsidiary Companies:			
Interest in Net Capital Assets....	\$18,154,702.63		
Interest in Net Current Assets.....	<u>13,520,309.40</u>		31,675,012.03
Current Assets:			
Inventories:			
Raw Materials and Supplies	\$35,430,776.47		
Less—Reserve	<u>14,150,000.00</u>	\$21,280,776.47	
Work in Process		1,298,888.47	
Finished Products		<u>10,622,250.36</u>	
		\$41,201,915.30	
Customers' Notes, Trade Acceptances and Accounts Receivable (less reserve)....		19,332,995.93	
Cash		<u>11,176,005.11</u>	72,711,006.34
Other Assets:			
Including Special Account and A. C. & Y. R. R. Co and Other Securities held therein, Good-Will, Patents, etc.			12,500,000.00
Discount on Bonds and Debentures and Other Deferred Charges to Operations..			<u>6,000,447.23</u>
			\$177,228,515.88

III. \$14,505,800 PRIOR PREFERENCE STOCK (FEBRUARY, 1923)

Redeemable as a whole or in part at 110 and accrued dividends on 60 days' notice. Dividends payable quarterly January, April, July, and October 1. Par value of shares \$100. Total authorized \$40,000,000; issued \$33,098,000; purchased by company for retirement \$13,098,000; under contract to the company for purchase and retirement on or before February 1, 1924, \$5,000,000. Stock free from all present Ohio taxes except inheritance tax. Dividends free from the present United States normal income tax. A cumulative annual sinking fund provides for purchase at or below 110 and accrued dividends, or if not so obtainable, for call at that price. The \$5,000,000 stock (voting trust certificates)

**GOODYEAR TIRE & RUBBER COMPANY—BALANCE SHEET
AS OF FEBRUARY 28, 1921**

LIABILITIES		
First Mortgage (Closed) 20-Year 8% Sinking Fund Gold Bonds		\$ 30,000,000.00
Ten-Year 8% Debenture Bonds.....	\$30,000,000.00	
Less—in Treasury	<u>2,500,000.00</u>	27,500,000.00
Current Liabilities (Mainly payable only as materials for which incurred are required by company)		9,571,198.38
Reserve for Contingencies and Possible Federal Taxes		4,972,717.50
Reserve for Additional Possible Loss on Rubber and Fabric under Commitments but Not Delivered, in Excess of Amount of \$15,250,000.00 Provided for by Issue of Prior Preference Stock.....		8,750,000.00
Capital Stock:		
Prior Preference Stock 8%:		
Authorized	\$40,000,000.00	
To be presently issued exclusive of stock issued as collateral only or reserved for creditors and contractors not yet assenting to plan, etc.	<u>30,342,000.00</u>	
Preferred:		
Issued	\$65,532,600.00	
Less—in Treasury	<u>450,000.00</u>	65,082,600.00
Management Stock		10,000.00
Common Stock (no par value).....	<u>1,000,000.00</u>	96,434,600.00
		\$177,228,515.88

* To the extent that this amount may be increased by further acceptances of stock under the plan, net tangible assets will be increased.

under purchase contract will be redeemed for the sinking fund, which should redeem the entire amount now outstanding within 13 years.

Application will be made in due course to list voting trust certificates on the New York Stock Exchange. Price: \$98 per share (flat).

E. THE RESULT OF THE READJUSTMENT

i. CAPITALIZATION AND INTEREST REQUIREMENTS

	Issue	Outstanding
First Mortgage 20-Year 8% Sinking Fund Gold Bonds..	\$27,750,000	
Ten-Year 8% Sinking Fund Gold Debenture Bonds....	27,500,000	
8% Cumulative Prior Preference Stock (par value \$100). .	20,000,000	
6% Cumulative Management Stock	10,000	
7% Cumulative Preferred Stock (par value \$100)	65,079,600	
Common Stock (no par value) Declared Value.....	1,000,000	

2. SINKING FUND REQUIREMENTS**(a) First Mortgage Bonds**

The mortgage provides a sinking fund to retire \$750,000 first mortgage bonds each six months, beginning November 1, 1921, by drawing by lot at 120 and interest, thus retiring the entire issue by maturity at a premium of 20%.

(b) Debenture Bonds

The company covenants to pay to the trustee as a sinking fund, on or before March 15, of each year, out of the net earnings for the preceding calendar year remaining after providing for all fixed charges accrued for the calendar year and after paying dividends accrued on the prior preference stock to the end of said year, either: (a) \$1,500,000 cash; or (b) 25% of such remaining net earnings; whichever is greater.

The obligation to pay the minimum sinking fund of \$1,500,000 is cumulative out of future earnings. The moneys thus paid to the trustee shall be applied, on or before the May 15 following such payments, to the purchase of the debenture bonds up to but not exceeding 110% and interest, or, thereafter, to the redemption of debenture bonds at 110% and interest at the earliest date permitted. All debenture bonds purchased or redeemed by the sinking fund shall be canceled.

The company covenants that, if payments to the sinking fund as above described shall not have effected, before maturity, the retirement of all the debenture bonds, not otherwise retired, the debenture bonds will be paid at maturity at 110% and interest.

29. RAND PUBLIC UTILITIES COMPANY—USE OF REDEMPTION PROVISION IN A NEW BOND ISSUE

In June, 1921, the Rand Public Utilities Company decided to issue \$40,000,000 of 30-year 5½% bonds. It seemed probable at that time that the bonds could be sold to the public at 98, which represented a yield basis of 5.64%. On the assumption of a total flotation and legal expense of four points, the net amount to be received by the company from the bankers was 94% of the par value of the bonds, which represented a cost to the company, therefore, of about 5.93%. In the preparation of the indenture the question was raised whether or not the bonds should be made callable, and if so whether during the whole or only part of the life of the bonds, and how much the premium should be.

The following principal types of redemption features were considered. Bonds might be redeemable at any time during the life

of the issue at the option of the company, or at any time after a given lapse of time, for example, after 10 years from the date of issue. Either of these types might be callable at a fixed price or at figures on a sliding scale, with either small or large steps in price and short or long periods of time.

The foregoing assumes redemption of the issue as a whole only. One variation of this was that bonds might be redeemed as a whole or in some large lot. An example was the issue of Chicago, Burlington & Quincy joint 6½s put out in 1921, which were redeemable as a whole or in lots of not less than \$5,000,000. A second variation was that if the issue was not redeemed as a whole, partial redemption might be made only in connection with sinking fund operations. Of this type was the issue of the Kingdom of Netherlands' 50-year 6s, redeemable after 10 years at par as a whole, except for the sinking fund which operated annually beginning March, 1933, and would retire ultimately the whole issue by call at par and interest.

There were, finally, bond issues which were callable only for sinking fund purposes. The redemption price in such cases might or might not be above par.

One of the advantages of the inclusion in the bond indenture of a provision for redemption was that when an issue was sold in a period of high interest rates a redemption feature enabled the company to call the bonds later when interest rates had decreased and to substitute for them another issue of bonds bearing a lower rate of interest with a consequent saving in interest payments.

A second reason for the inclusion of a call provision in a bond indenture was that it enabled the company to withdraw an issue which had an unsatisfactory provision in the indenture. For example, issues occasionally were brought out in a time of general stress or of difficulties in the affairs of the issuing corporation. In such cases there were provisions such as restrictions on dividend payments, or burdensome conditions in regard to the mortgaging of the company's property, which retarded or prevented the expansion of the company unless the issue was removed by refunding operations.¹

¹ An optional redemption feature was of particular advantage to companies in industries characterized by wasting, non-replaceable assets. The mining industry, for example, frequently passed through successive periods of high and low profits. Depletion could be provided for by a serial issue or by a sinking fund which required the redemption of a high percentage of the total issue an-

Opposed to these advantages was the fact that in periods of high interest rates, when a decline in interest rates in a few years was probable, a callable bond was not so salable as a non-callable bond for the obvious reason that investors who realized that they had an excellent opportunity to invest their money at high yields did not want their bonds taken from them in a few years when they were likely to have to reinvest their money at a lower return. Because of this fact, of two bonds that were equally good in other respects, the non-callable bond in a period of high interest rates invariably sold at a price more favorable for the issuing company. For this reason, in order to make a callable issue more attractive to investors, a company frequently was impelled to place the call figure well above par. If this was not done investors did not think of the issue in terms of a distant maturity, whatever the nominal maturity date might be, since they realized that the corporation was likely to call the bonds whenever interest rates declined appreciably. At such times it was difficult for investors to secure other bonds with yields comparable with that of the redeemed issue. A call figure might be well above the issue price either because the former was high or the latter was low; that is, the call figure might be high above par, at 110, 115, or even 120, or the issue price might be sufficiently below par to provide a similar difference between it and the call figure, even though the latter was close to par.

A disadvantage in the inclusion of a callable feature which provided for the compulsory redemption of bonds for the sinking fund was that if the property of the company was fixed and non-wasting, except as provided for by depreciation or by a sinking fund, a non-callable sinking fund was better and cheaper from the standpoint of the company if the retirement could be made by the purchase of bonds in the open market at or below par. In a period of an upward trend of interest rates this was especially applicable to a bond bearing a low coupon rate and with a long time before maturity, because in that period the bond was more likely to sell at a discount than at a premium. A compulsory sinking fund under these conditions was undesirable, since it was then to

nually. Provisions of this kind, however, were likely to be difficult of fulfillment as a result of the varying earnings. If a mining company was able to take advantage of its prosperous years by refunding all or part of an issue of bonds, the same results were accomplished with much less difficulty and inconvenience than if the company had to comply with the provisions of a sinking fund.

the advantage of the company to keep outstanding all its low interest bearing bonds in order to increase the earnings for the stockholders. The company, moreover, avoided or lessened the need of further borrowings by using in the business cash which had been secured originally at low cost and which otherwise would have been paid back to the lenders through the operation of the compulsory sinking fund.

It was the policy of the Rand Public Utilities Company not to bond its property or increase its liabilities to any greater extent than necessary. This fact in itself militated against a policy of selling bonds at a large discount simply to take advantage of the preference of the public for bonds selling below par. Since this preference was of importance and could not be disregarded, there were two courses open to the company if it decided to include a redemption provision in the bond indenture. One was to increase the capital amount of the indebtedness by the sale of bonds at a discount and to place the call price little if any above par. It seemed probable that if the bonds were sold below par a smaller spread between sale price and redemption figure was necessary to make them attractive, than if the sale price was near or above par. The other was to issue a minimum amount of bonds and put the call price of the bonds at a high figure. The issue of the minimum amount, however, required a slightly higher coupon rate, and the high call price might prove costly if redemption became desirable.

In a period of low interest rates, when the cyclical and secular trends were upward, the matter of a callable feature was of far less moment than in a period of high interest rates with prospects of a decline in the near future. In a period such as the former there was little likelihood that the issuing corporation could refund its bonds in the future with others of a still lower coupon rate. On the other hand, in such a period a provision for redemption could not be expected to have any adverse effect upon the investor, for when the latter had bought his bonds in a period characterized by low interest rates and an upward trend, he was in no worse position if the bonds were called at some future date.

Prior to 1914, there had been steady upward trends of both commodity prices and interest rates. The executives of the Rand Public Utilities Company were of the opinion that there was no reason for expecting a change in these upward trends during the decade following 1921. With regard to commodity prices

they reasoned that the most important influence which the war had toward a reversal of the trend was in reducing the production of gold. On the other hand, the war caused a large amount of gold to be concentrated in central banking reserves and thus increased the effective world supply of gold for monetary purposes. The Federal Reserve System, furthermore, worked to the same end. These factors seemed likely to have an influence, other things being equal, toward the maintenance or raising of commodity prices during the next decade.

The yield on high-grade, non-tax-exempt bonds at this time seemed not much higher than if the pre-war trend of yields on this class of bonds had continued. This was so, in spite of the fact that since 1913 a substantial income tax had been levied on incomes from bonds. The executives were convinced that, for whatever reason, the influence of the income tax was not as great as might have been expected, and that, therefore, the pre-war upward trend would not be reversed even in the event of a future lowering of income tax rates. A further basis for this belief was the assumption that industry would continue not merely to call for large absolute amounts of capital, but to use capital in increasing proportions relative to the use of labor, in the form of labor-saving devices to overcome such factors as shorter hours of labor or diminishing returns in the extractive industries.

Although the current long-term interest rates were declining, the company expected an upward trend to commence in about a year and did not believe that the bonds would be refunded on a favorable basis at a date much in advance of their maturity. It was decided, therefore, to take advantage of the popular liking for non-callable bonds and the consequent salability of such bonds on favorable terms. A provision for calling the bonds during the last few years of their life, however, was desirable, so that if a few years before maturity interest rates appeared to be rising the bonds could be refunded and a new issue could be sold with less cost to the company than at the date of maturity.

For these reasons the company decided to include in the indenture a provision that the bonds could be redeemed at par during the last five years of their life at the option of the company. In this way the date of possible redemption was placed far enough in the future to secure practically the advantages of a long-term, non-callable bond, and at the same time the company was assured

of being able to refund the issue at the most favorable rate of interest existing during the last five years prior to the maturity of the bonds.

30. WILSON PUBLIC UTILITIES COMPANY—TIME OF REFUNDING
HIGH INTEREST BEARING BOND ISSUE TO TAKE ADVANTAGE OF
DECLINE IN INTEREST RATES

As of October 1, 1920, the Wilson Public Utilities Company sold to bankers at $90\frac{1}{2}$ a \$14,000,000 issue of 25-year 7% bonds, redeemable at $107\frac{1}{2}$ and interest, on any interest date on 60 days' notice. These bonds were offered to the public at 95 and interest. A sinking fund provided for payment on April 1, 1921, and semiannually thereafter, of \$115,000 for the acquisition of bonds at not exceeding $107\frac{1}{2}$ and interest. Bonds so acquired continued to bear interest, which was added to the fund.

The bond market improved during 1921 and 1922 to such an extent that the Wilson Public Utilities Company desired to call its 7% bonds and to substitute 5% bonds for them, providing the refunding operations could be made on terms profitable to the company. In June, 1922, computations were made regarding the basis upon which the refunding operation probably could be performed. As a result of these computations, it was recommended that the new series of 5% bonds be issued at some time in July or August, 1922. If the new bonds were sold during this period, sufficient time was provided to give notice of call before August 1 for redemption of the outstanding 7% bonds on October 1. The next callable date was April 1, 1923, and the recommendation stated that it was not likely that a new issue could be sold so advantageously at the latter date as during the summer of 1922, since rising interest rates were forecast for the fall and winter of that year.

The recommendation was not followed, however, and the company decided to postpone the refunding of the issue. Several issues of from \$20,000,000 to \$40,000,000 each had been sold during the early part of the summer by other public utilities, and the executives were of the opinion that the market might not be able to absorb so many bonds of this kind in so short a period. They decided, therefore, to wait for a more favorable time in the future before issuing the proposed bonds.

In September, 1922, other computations were made regarding the basis on which new bonds probably could be sold in the fall of 1922 or during the winter of 1922-1923. Table 15, below, indicates the computed cost of the new issue to the company, the present worth of the net saving, and the principal amount of the refunding issue, based upon sale prices assumed to yield between 5.10% and 5.25%, and upon a total flotation expense of 3½ points. These yields corresponded to sale prices from 98.6 to 96.7, which netted the company from 95.1 to 93.2, respectively. The calculations of savings were based on the assumption of a 23-year life for the new bonds, because this period corresponded to the unexpired life of the outstanding issue and it was not feasible to make any assumptions regarding the cost of the new money over the remainder of the life of the new bonds, subsequent to the 23 years which the outstanding issue still had to run before its maturity. The present worth of the net savings was computed by deducting the present worth of the principal loss from the present worth of the semiannual interest saving.

TABLE 15—WILSON PUBLIC UTILITIES COMPANY—23-YEAR 5% BONDS
TO RETIRE \$13,666,000 FIRST AND REFUNDING 7%
BONDS ESTIMATED AS OUTSTANDING ON
SEPTEMBER 1, 1922¹

(1) Basis to Public	(2) Price to Public	(3) Net to Company	(4) Basis of (3)	(5)* Present Worth of Net Saving Based on (3)	(6) Principal Amount of Refunding Issue Necessary
5.1%	98.6	95.1	5.38%	\$1,885,000	\$15,448,000
5.15	98	94½	5.42	1,789,000	15,546,000
5.188	97½	94	5.46	1,709,000	15,629,000
5.2	97½	93.83	5.48	1,682,000	15,657,000
5.225	97	93½	5.5	1,629,000	15,712,000
5.25	96.68	93.18	5.53	1,576,000	15,766,000

*Calculated by the method illustrated in the text.

The sale of a 5% refunding issue of a 25-year maturity, non-callable either for sinking fund purposes or otherwise for 22 years, but callable as a whole only on any interest date at par and interest during the last three years of the life of the bonds, was

¹ Since the market price was well above 107½ and was likely to remain so for a year or more in the absence of an announcement of redemption, it was estimated that approximately this same amount would be outstanding on April 1, 1923, if this date was selected for the redemption, or on October 1, 1923, if redemption was deferred until then.

recommended. The executives were of the opinion that a bond issue of this type could be sold to the public during September, 1922, on a 5.15% basis, or at 98% of par, and, if all underwriting and legal expenses could be covered by a spread of 3½ points, would net the company 94½%. Under these circumstances, the sale of \$15,546,000 of these bonds was necessary to raise the funds required to redeem \$13,666,000 old bonds at 107½. The following calculations show in detail the savings which could be effected by a refunding of the outstanding 7% bonds on this basis.

Savings through the Refunding Operation: In spite of the increase of \$1,880,000 in the funded debt of the company, there was a saving well in excess of this sum in the reduction in interest charges over the 23 years which the old bonds were to run. Interest on \$13,666,000 old 7% bonds amounted to \$956,620 annually; interest at 5% on \$15,546,000 new bonds amounted to \$777,300, a difference in favor of the new bonds of \$179,320. Over a period of 23 years this amounted to a total of \$4,124,360, a sum \$2,244,360 in excess of the increase in capital liabilities. In other words, even if the \$1,880,000 increase in funded debt were amortized each six months by the straight-line method, the net addition to earnings after such amortization was nearly \$98,000 a year, or \$49,000 each six months.

These figures, furthermore, were based on the assumption that the existing 7% issue, if left undisturbed, was to be paid off finally at par, whereas the sinking fund provisions compelled the purchase of bonds at any figure up to and including 107½. Since the average cost of the bonds purchased during the next 23 years was likely to be not less than 105, and probably nearer 107 than 105, bearing another extraordinary rise in interest rates, it was possible to add to the above figure of net savings an amount of 5% of \$13,666,000, or \$683,300, which brought the total saving to \$2,927,660. Table 16, on page 246, summarizes these factors.

The present worth of the actual saving of \$2,927,660, exclusive of the \$683,300 saving on premiums, figured on a 5.42% basis, as shown in Table 15, was about \$1,789,000. (Present worth of principal loss of \$1,880,000 deducted from present value of a semiannuity of \$89,660, the difference between the semiannual interest on the 7% and 5% bonds, for 23 years.)

TABLE 16—FACTORS IN THE REFUNDING OF HIGH INTEREST BONDS OF WILSON PUBLIC UTILITIES COMPANY

DEBITS	CREDITS
Par value of new bonds that must be sold.....\$15,546,000	Par value of old bonds to be redeemed .....\$13,666,000
Interest on new bonds... 17,877,900	Interest on old bonds (in- cluding bonds kept alive in sinking fund)..... 22,002,260
<i>Net Gain</i> , actual, disre- garding times when gains were to be real- ized 2,927,660	5% of par value of old bonds, probable mini- mum average premium that would be paid by sinking fund 683,300
<u>\$36,351,560</u>	<u>\$36,351,560</u>

The increase in capital liabilities of \$1,880,000 was accounted for as follows:

7½% premium on \$13,666,000 old bonds	\$1,024,950
Discount and expense on \$15,546,000 of new bonds	855,030
	<u>\$1,879,980</u>

In the foregoing calculations of actual net savings and of the present worths, no account was taken of the fact that on October 1, 1922, about \$1,260,000 of the discount and expense of the old issue would remain unamortized and would have to be written off the surplus account at once. The reason for neglecting this item was that the actual loss, in the sense of the difference between liabilities incurred and assets received, had occurred as of October 1, 1920. Writing off this item, as well as the amount required to pay the 7% premium on the called bonds, involved a total immediate reduction in the company's surplus of about \$2,285,000, which left approximately \$5,600,000 of corporate surplus as of October 1, 1922.

It was necessary to make further computations to compare the possible results of a sale of the new issue before October 1, 1922, and of a sale during the winter of 1922-23 to provide funds for the redemption of the outstanding 7% bonds on April 1, 1923. To redeem the 7% bonds at 107½ required \$14,691,000. On the basis of a sale at 98, after allowance for proceeds 3½ points less than the price to the public, the total amount of the new issue was \$15,546,000. If these bonds were sold in the near future, the proceeds to be payable on October 1, 1922, the \$14,691,000 received from the bankers would be on deposit for six months at 2%

per annum, and earn in this time \$146,910 interest. In the same six months bond interest amounting to \$388,650 on the new 5% bonds would be paid or accrued. The result, therefore, was a net interest outgo for the six months of \$241,740. The net interest loss involved in selling so far in advance of redemption was about one-sixth, or \$40,000, less than this, since even if the bonds were not sold until the winter of 1922-23, proceeds on these probably could be expected not later than March 1, 1923, and the interest outgo for the month of March was roughly equivalent to this figure. The actual net loss in interest, therefore, was likely to be approximately \$200,000.

If this net loss was treated as a capitalizable cost to the extent that it could be assigned a yearly interest and amortization charge, as if it represented an outlay for property or a discount on bonds sold, then by adding the figure to \$15,546,000, it was possible to ascertain approximately the equivalent principal amount of bonds which could be sold during the following winter without incurring a loss as compared with the cost of borrowing at current rates.

$$\$15,546,000 + \$200,000 = \$15,746,000$$

This equaled the amount of bonds needed to raise \$14,091,000, if sold to the public at 96.8%.

Twenty-five-year bonds sold to the public at 98 yielded 5.143% and cost the company 5.39%.

Twenty-five-year bonds sold to the public at 96.8 yielded 5.231% and cost the company 5.496%.

The difference was .088% in the basis of sale to the public and .1% in the cost basis to the company. As figured above, if bonds were sold to the public during the winter of 1922-23, the selling price could be no less than 96.8 in order to have the cost no greater than that of bonds sold at 98 during the fall of 1922. In other words, if bonds could be sold during the winter at a price greater than 96.8, it was profitable to wait until that time before bonds were issued; otherwise it was more profitable to float the issue in the fall and to hold the proceeds until the following April.

A comparison of financing in the winter of 1922-23 and redemption on April 1, 1923, with financing during the summer of 1923 for redemption on October 1, 1923, revealed that during the six months there was involved a loss represented by the difference between the payment of interest on \$13,666,000 old bonds at 7% and the payment of interest on \$15,712,000 new bonds at 5%, on the

assumption that if financing took place during the winter new bonds could be sold to the public at about 97. This difference amounted to \$85,500 or approximately $\frac{1}{2}$ of 1% of the principal amount of the new bond issue. If redemption and refinancing were postponed until the summer of 1923, therefore, the bonds had to be sold at that time at one-half point higher than it was necessary to sell them during the winter, in order to compensate for the difference in interest payments.

The recommendation submitted in September, 1922, stated further that after September, 1922, the most favorable time for selling bonds during the then existing phase of the current business cycle was likely to be not later than midwinter or early spring of 1923. If this supposition as to the course of interest rates was correct, there was an incentive to carry out the financing during the winter of 1922-23 rather than during the summer of 1923.

In the first part of January, 1923, it appeared that the most favorable time for financing during 1923 had arrived and that for the remainder of the year the trend of bond prices was likely to be downward. During December there had been a distinct reaction upward in price, and downward in yield, of high-grade corporate bonds, among which the most marked improvement had been in public utilities. The company's statistics showed that the average yield of high-grade corporate bonds at the end of December, 1922, was about $\frac{1}{6}$ of 1% higher than at the low point reached in the latter part of the summer of 1922. The corresponding average net price loss on a 25-year bond was slightly over two points.

For high-grade bonds, especially since the element of risk with varying profits of industry was reduced to a minimum, the market for short-time money was especially important as a governing factor. The nearest parallel to the existing situation since the creation of the Federal Reserve System was at the end of 1915, when business was at about the same point in relation to normal as in the beginning of 1923. With regard to the situation in the money market, two marked differences as to the prospects for the year 1923 were noted in addition to the fact that in 1915 there was no enormous volume of short-time Government paper such as existed in 1923. At the beginning of 1916, the Federal Reserve ratio was over 90%. Early in January, 1923, it was slightly over 70%. During 1916, moreover, at least \$400,000,000 in gold was imported, which was far in excess of the probable amount for

1923. Whereas during practically all of 1916, therefore, money rates, though tending upwards, remained below 4% and bond yields at the close of the year differed little from those at the beginning of the year, the same situation could not be expected to hold in 1923 whatever the scale of business reaction during that year.

During the first week of 1923, there occurred an exceptionally large volume of new financing. Although this volume, of course, could not be expected to continue throughout the year, it was believed that the business recovery which seemed probable during the year was likely to be accompanied by a relatively large volume of offerings of securities to the public. The opinion was held, furthermore, that banks were not likely to be able to take on important volumes of securities during 1923; if anything, they might be expected to sell securities. Whether their sales might be to a greater extent of Government securities than corporate securities could not be determined, but whichever policy was followed was not likely to change materially the effect upon the general bond market. Whereas the discount policy of the Federal Reserve System also was difficult to predict, it was believed that in any case further business recovery would raise interest rates and depress bond prices. The conclusion was reached that as a result of these various factors the trend of bond prices might be expected to be downward throughout 1923 regardless of when the improvement in business conditions came.

The company decided, therefore, to float the proposed issue of 5% bonds at once. The issue was sold a few days before the middle of January, 1923, to bankers who offered the bonds to the public at 98½.

31. CHICAGO AND OMAHA RAILROAD COMPANY—COMPARISON OF ADVANTAGES OF ISSUING 5% AND 5½% BONDS

The Chicago and Omaha Railroad Company was in a strong financial condition and its securities always were attractive to investors. In April, 1923, the company proposed to sell an issue of bonds to net the company about \$3,600,000. This was to provide for refunding an issue of \$2,000,000 of 5% bonds which were due on November 1, 1923, and for the payment for recent additions to railroad plant and equipment. The executives of the

company believed that bonds could be sold on a more favorable basis at this time than six months later. It was necessary to determine, however, whether 5% or 5½% bonds should be sold in order to net the greater gain to the company.

Comparisons were made of the estimated cost to the company of selling 5% and 5½% bonds. A \$4,000,000 bond issue, sold at 90, yielded \$3,600,000, which, for 30-year 5% bonds, represented a 5.7% basis. The total cost to the company of such an issue was as follows:

Interest for 30 years at 5%	.....	\$ 6,000,000
Principal due at maturity	.....	<u>4,000,000</u>
		\$10,000,000

The annual charge was as follows:

Interest	.....	\$200,000
Amortization (1/30 of \$400,000)	.....	<u>13,333</u>
		\$213,333

In order to sell a 5½% bond on a 5.70% basis, net to the company, it was necessary to obtain 97.14 from the bankers. To secure \$3,600,000, bonds of the principal amount of \$3,706,000 must be sold. The total cost under this assumption was as follows:

Interest for 30 years at 5½%	.....	\$6,114,900
Principal to be paid at maturity	.....	<u>3,706,000</u>
		\$9,820,900

The annual charge was as follows:

Interest	.....	\$203,830
Amortization (1/30 of \$106,000)	.....	<u>3,533</u>
		\$207,363

The issue of 5½% bonds, therefore, represented apparently a total saving over the whole period of \$179,100, or an annual saving of \$5,970.

Bonds with low coupon rates, however, tend to sell on a yield basis more favorable to the issuing company than bonds with higher coupon rates, especially in periods of declining bond interest rates. There is a prejudice among individual investors against paying a premium for a bond, which results from their impression that they have a greater speculative chance for gain in purchasing a bond selling well below par than they have in buying a bond selling near or above par. For example, if a bond sells

at 70, with the prospect of receiving \$100 for it at maturity the investor is attracted by what appears to him to be a \$300 profit on every \$700 invested and is influenced to purchase this bond in preference to another which sells on the same yield basis at a price nearer par. Even though the maturity date is far away, there is always a chance that lower interest rates in the money market will cause the price of the bond to rise and thus permit a capital gain well in advance of maturity. The investor realizes that the bond purchased near par will encounter the inevitable prejudice against premium bonds after rising above par and, therefore, will not have as great a rise in price as the general money market conditions warrant even though it is non-callable. If the bond is callable its increase in value will be still less, and in any case its market price will rise little, if any, above the call price.

Therefore, whereas 5% bonds probably could be sold to bankers on a 5.70% basis, it was possible that a 5½% issue could not be sold on a basis as favorable to the company. On the assumption of an offer from bankers of only 96.45 for 5½% bonds, which represented a 5.75 basis, bonds to the principal amount of \$3,732,500 were necessary in order that the company might net \$3,600,000. The total cost was as follows:

Interest for 30 years at 5½%	.....	\$6,158,625
Principal to be paid at maturity	.....	<u>3,732,500</u>
		\$9,891,125

The annual charge was as follows:

Interest	.....	\$205,287
Amortization (1/30 of \$132,500)	.....	<u>4,417</u>
		\$209,704

In this case the total saving was \$108,875, and the annual saving \$3,629, through the issue of 5½% bonds on a 5.75% basis instead of 5% bonds on a 5.70% basis.

There was also a slight saving in the issue of 5½% bonds even if the bankers offered only 95.76, which was on a 5.80% basis. In this case the issue of \$3,759,400 of bonds was required and the total cost was as follows:

Interest for 30 years at 5½%	.....	\$6,203,010
Principal to be paid at maturity	.....	<u>3,759,400</u>
		\$9,962,410

The following was the annual charge:

Interest	\$206,767
Amortization (1/30 of \$159,400)	5,313
	\$212,080

The total saving was \$37,590, or \$1,253 annually.

Even in the last case assumed above, the principal amount of the funded debt was \$240,000 less in the case of 5½% bonds sold to bankers on a 5.80 basis than in the case of 5% bonds sold to them on a 5.70 basis. The sale of 5½% bonds, therefore, improved the company's financial status and also involved a smaller amount to be paid at maturity.

The present worths of the respective gross gains assumed to be realized from an issuance of 5½% bonds on a 5.70, 5.75, and 5.80 basis, respectively, instead of 5% bonds on a 5.70 basis, were as follows:

The present worth of a saving of \$179,100 from selling 5½% bonds on a 5.70% basis	\$120. ¹
(Present worth of a semiannualty of \$1,915, the interest loss on 5½% bonds, at 5.70%, for 30 years, deducted from present worth of \$294,000, the saving in principal, at 5.70%, payable in 30 years, assuming interest computed semiannually.)	
The present worth of a saving of \$108,875 from selling 5½% bonds on a 5.75% basis	<i>a loss of \$25,964</i>
(Present worth of a semiannualty of \$2,644, the interest loss on 5½% bonds, at 5.75%, for 30 years, deducted from present worth of \$267,500, the saving in principal, at 5.75%, payable in 30 years, assuming interest computed semiannually.)	
The present worth of a saving of \$37,590 from selling 5½% bonds on a 5.80% basis	<i>a loss of \$52,209</i>
(Present worth of a semiannualty of \$3,383, the interest loss on 5½% bonds, at 5.80%, for 30 years, deducted from present worth of \$240,600, the saving in principal, at 5.80%, payable in 30 years, assuming interest computed semiannually.)	

Should the Chicago and Omaha Railroad Company have issued 5% bonds or 5½% bonds?

D. GOVERNMENT AID TO AGRICULTURE

32. NATIONAL LEGISLATION FOR AGRICULTURAL RELIEF

The following bill was introduced into the House of Representatives on January 16, 1924, and referred to the Committee on

¹ Theoretically this should be zero. The difference probably arises because some of the preceding figures are not exact to the last digit.

Agriculture. Numerous sections dealing with details of administration have been omitted but all the essential provisions have been included.

A BILL

Declaring an emergency in respect of certain agricultural commodities, to promote equality between agricultural commodities and other commodities, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I. UNITED STATES AGRICULTURAL EXPORT COMMISSION

PART I. ORGANIZATION AND ADMINISTRATION

Section 1. (a) There is hereby established, as an emergency measure, a temporary commission to be known as the United States Agricultural Export Commission (hereinafter in this Act referred to as the "commission") and to be composed of the following:

- (1) The Secretary of Agriculture, who shall be the chairman of the commission
- (2) The Secretary of Commerce, who shall be the vice-chairman of the commission
- (3) The Secretary of the Treasury
- (4) The chairman of the United States Tariff Commission
- (5) The three directors of the Agricultural Export Corporation, created by Title II of this Act
- (6) An administrative commissioner to be appointed by the President, by and with the advice and consent of the Senate * * *

Sec. 7. For expenses in the administration of the functions vested in the commission by this Act there is hereby authorized to be appropriated the sum of \$50,000, to be available for such expenses incurred prior to July 1, 1925.

PART 2. RATIO PRICES

GENERAL EMERGENCY

Sec. 21. (a) It is hereby declared that there exists a general emergency in respect of agricultural commodities by reason of—

- (1) The continued economic depression in agriculture;
- (2) Inequalities in prices between agricultural commodities and other commodities, resulting in a relatively inadequate return to the farmer for his labor and upon his investment;
- (3) The existence of surpluses available for export in agricultural commodities;
- (4) The necessity in part for the existence of such surpluses in

order to safeguard the domestic market against uncertainties of yield, and the economic impracticability of immediately preventing the continued production of such surpluses;

(5) The dependence of the prices of such surplus commodities upon the lower prices in foreign markets due to unsettled world conditions and lower costs of production.

(b) The President, upon recommendation by the commission, is authorized by proclamation to terminate the emergency declared by this section whenever the commission determines that the emergency conditions have ceased to exist or are no longer controlling; but in no event shall such emergency be held to exist later than ten years from the June 30 next following the date of passage of this Act.

SPECIAL EMERGENCY

Sec. 22. (a) If the commission finds that (1) there is a surplus for export of wheat, flour, corn, raw cotton, wool, cattle, sheep, swine, or any food product of cattle, sheep, or swine, and that the domestic price thereof is determined by the world price, and (2) according to estimates made by it, the ratio prices, as defined in section 24, in respect of the commodity would be in excess of the domestic price thereof, the commission is authorized to notify the President in writing of its findings. Upon such notification from the commission, the President is authorized by proclamation to declare that a special emergency exists as to such agricultural commodity.

(b) Whenever the commission finds that the special emergency conditions no longer exist or are no longer controlling in respect of the agricultural commodity, it shall notify the President in writing of its findings, and the President is authorized by proclamation to declare that such special emergency is terminated.

DEFINITIONS

Sec. 23. As used in this Act—

(a) The term "basic agricultural commodity" means any agricultural commodity produced in the United States in respect of which a special emergency has been declared and not terminated, and any class or grade of any such commodity.

COMPUTATION OF RATIO PRICE

Sec. 24. (a) The commission shall publish, for each month commencing after the issuance of the proclamation declaring a special emergency in respect of any basic agricultural commodity, a price therefor to be known as the "ratio price" and to be determined as follows:

(1) The ratio price of such basic agricultural commodity for any month shall bear the same relation to the current all-commodities price in effect for such month as—

(2) The pre-war basic-commodity price thereof for the corresponding month bears to the pre-war all-commodity price in effect for such month.

(b) For the purpose of determining a ratio price—

(1) The Secretary of Labor, as soon as practicable after the passage of this Act, shall compute twelve average prices, one in respect of each of the months of the year. Each such average price shall be the average of the prices of all commodities attributable to such month for the period 1905 to 1914, inclusive. Any such average price is referred to in this Act as the "pre-war or all-commodities price." In computing such pre-war all-commodities prices the Secretary of Labor shall use the prices selected and the weights applied as the basis for computing, for all commodities for such years, the index numbers shown on page 9 of Bulletin Numbered 335 of the Bureau of Labor Statistics.

(2) The Secretary of Agriculture and the Secretary of Labor shall, as soon as practicable after the issuance of a proclamation, declaring a special emergency in respect of a basic agricultural commodity, jointly prepare in respect of such commodity twelve average prices, one in respect of each of the months of the year. Each such average price shall be the average of the prices for such commodity attributable to such month for the period 1905 to 1914, inclusive. Any such average price is referred to in this Act as the "pre-war basic-commodity price."

(3) The Secretary of Labor within fifteen days after the termination of a month shall compute and publish the average price of all commodities for such month. In computing such average price the Secretary shall use the commodities selected and the weights applied by the Bureau of Labor Statistics as a basis for computing for the year 1923 the index numbers of wholesale prices of all commodities for such year. Such average price is referred to in this Act as the "current all-commodities price."

(c) For the purposes of subdivision (a), the current all-commodities price or the pre-war all-commodities price in effect for any month shall be the price computed for the preceding month.

(d) Ratio prices for any month shall be published at noon on the 15th day of such month and shall remain in effect until noon of the 15th day of the next following month. The publication of the ratio prices in respect of any basic agricultural commodity shall cease upon the termination, as provided in section 22, of the emergency in respect of such commodity.

(e) For the purpose of any computation under this section the officers or agency directed to make the computation may prescribe such necessary regulations as are in accordance with approved statistical methods.

EXPORT SURPLUS

Sec. 25. (a) The commission shall determine the probable export surplus of basic agricultural commodities, considering in such determination in respect of any such commodity probable and previous domestic consumption, present reserves, carry over, probable and previous exports and imports, and estimated current production. Upon the basis of any such determination the commission, whenever a ratio price is established in respect of any basic agricultural commodity, shall recommend to the corporation (1) the estimated amount of any such commodity to be purchased for the purposes of this Act for the remainder of the current year, and (2) the amount to be purchased during each month of such year. Thereafter, recommendations for amounts of such commodity to be purchased (1) for each year and (2) for each month, shall be made prior to the beginning of such year.

(b) Whenever, after such recommendation, the commission finds that the domestic price of such commodity is more than 10 per centum lower than the ratio price established for such commodity, it shall revise its recommendations in respect of the yearly and monthly amounts of such commodity to be purchased by the corporation, so as to raise such domestic price to the level of the ratio price.

(c) Whenever the commission deems it advisable it shall direct the corporation to sell in the domestic market, at not less than the ratio price, such quantities of the commodity in its custody as the commission may designate.

TITLE II. UNITED STATES AGRICULTURAL EXPORT CORPORATION

PART I. ORGANIZATION AND MANAGEMENT

Sec. 201. For the purpose of relieving the emergency declared in section 21, by conducting the business of trading in basic agricultural commodities, the five following individuals and their successors are hereby incorporated and declared to be a body corporate under the name of the United States Agricultural Export Corporation (referred to in this Act as the "corporation"):

- (a) The Secretary of Agriculture
- (b) The Secretary of Commerce
- (c) Three individuals appointed by the President, by and with the advice and consent of the Senate * * *

PART 2. CAPITAL

CAPITAL STOCK

Sec. 221. (a) The capital stock of the corporation shall be \$200,000,000, and all of such amount is hereby subscribed by the United States. The amount of such subscription shall be subject to call (in amounts of \$5,000,000 or multiples thereof, and after thirty days'

notice of each call to the Secretary of the Treasury) by vote of four-fifths of the directors of the corporation. Payment of an amount so called shall be made by the Secretary of the Treasury, and stock in such amount, without voting privileges, shall be issued by the corporation to the United States and delivered to the Secretary of the Treasury. Receipts for payments of such amounts by the United States for such stock shall be issued by the corporation and delivered to the Secretary of the Treasury, and shall be evidence of the stock ownership of the United States.

(b) There is hereby authorized to be appropriated the sum of \$200,000,000, or so much thereof as may be necessary, for the purpose of purchasing stock of the corporation in accordance with the provisions of subdivision (a).

ISSUANCE OF SECURITIES

Sec. 222. (a) The corporation may borrow money and issue its notes, bonds, or other evidences of indebtedness therefor, except that the corporation shall not have power to issue or obligate itself in an amount of notes, bonds, or other evidences of indebtedness outstanding at any one time in excess of its authorized capital stock. The rate of interest, the maturity, and the other terms of the notes, bonds, or other evidences of indebtedness, and the security therefor, may be determined by the corporation.

LIABILITY OF THE UNITED STATES

Sec. 223. The United States shall assume no liability, directly or indirectly, for any notes, bonds, or other evidences of indebtedness issued by the corporation, and all such evidences of indebtedness shall so state on their face.

* * * * *

SPECIAL POWERS

Sec. 232. The corporation is authorized—

(a) To acquire, construct, maintain, and dispose of or acquire the rights of operation of (1) storage warehouses for basic agricultural commodities, (2) facilities for transportation (otherwise than as a common carrier) in connection with the storage of such commodities, except that no such facility shall be acquired by purchase or construction without the approval of the commission, and (3) facilities for processing such commodities.

(b) To make contracts for the processing of basic agricultural commodities held by the corporation.

(c) To conduct the business of furnishing storage facilities for basic agricultural commodities.

(d) To make advances directly to any person if the notes and bonds or other evidences of indebtedness representing such advances are

secured by warehouse receipts and/or shipping documents covering such commodities and/or mortgages thereof. Such advances shall be subject to such conditions as the corporation may impose, except that no advance shall be for a period in excess of three years, and except that the amount of the advance shall not exceed 75 per centum of the market value of the basic agricultural products covered by such warehouse receipts, shipping documents, or mortgages. The corporation may, in its discretion, sell any advances made under this section, with or without its indorsement.

(e) To acquire, hold, and dispose of certificates of indebtedness or interest of any person received as security for advances upon basic agricultural commodities or received in payment of the purchase price of such commodities sold by the corporation.

(f) To buy and sell foreign money for the purpose of avoiding the risk of fluctuations in exchange.

PURCHASES AND SALES BY THE CORPORATION

Sec. 233. (a) The corporation shall purchase during each month in the domestic market at the ratio price—

(1) The amounts of any basic agricultural commodity in accordance with recommendations made by the commission under section 25; or

(2) If the commission has revised its recommendations as provided in such section, then the amounts so recommended.

(b) The corporation shall sell the amounts of any such commodity purchased in accordance with the provisions of subdivision (a) of this section—

(1) In the foreign market at such times as it deems advisable and at the highest prices obtainable; and

(2) In the domestic market at not less than the ratio price if the commission, as provided in section 25, so directs.

(c) After the special emergency in respect of any such commodity has been terminated, the corporation, in order to wind up its operations in respect of such commodity, may sell its surplus thereof in either the domestic or foreign market at the highest prices obtainable.

PART 4. MISCELLANEOUS PROVISIONS

DISPOSITION OF ASSETS

Sec. 241. Upon the termination of the existence of the corporation all moneys in its treasury shall be covered into the Treasury of the United States as miscellaneous receipts, and all unliquidated property of the corporation shall be transferred to the United States in such manner as the President may by Executive order determine.



TITLE III. APPORTIONMENT OF EXPENSES AND EQUALIZATION LOSSES OF THE CORPORATION**PART I. EQUALIZATION FEE****PURPOSE**

Sec. 301. In order that the producers of each basic agricultural commodity may pay ratably their equitable share of the expenses of the corporation, and of the equalization losses sustained by the corporation from sales of basic agricultural commodities in foreign markets; and in order to prevent any unjust discrimination against, any direct burden or undue restraint upon, and any suppression of commerce in basic agricultural commodities with foreign nations in favor of interstate or intrastate commerce; and in order to encourage and stimulate the normal and usual current of such commerce, an equalization fee shall be apportioned and paid, as hereinafter provided, in respect of each sale of a basic agricultural product, by or on the account of the producer, during a special emergency ascertained and proclaimed under section 22.

DETERMINATION OF AMOUNT OF FEE

Sec. 302. (a) The commission shall for such operation periods, not in excess of one year, as it deems necessary, prepare estimates in respect of each agricultural commodity (unless it determines that a special emergency in respect of such commodity will not be ascertained and proclaimed during such year), as to (1) the probable prices obtainable in the foreign market for the exportable surplus determined under section 25; (2) the probable losses of the corporation from its transactions in the foreign market; and (3) the expenses of the corporation.

(b) Having due regard to such estimates, the commission shall determine, as nearly as may be, the total amount of such expenses and losses which will be incurred or sustained as a result of, and fairly and properly attributable to, the operations of the corporation in respect of each agricultural commodity during each operation period.

(c) The commission shall ascertain the standard unit of weight or measure by which each such commodity is commonly sold or traded in, in the markets or exchanges of the United States, and shall determine the amounts to be collected in respect of each sale of such unit, as hereinafter provided. Such amount is hereinafter referred to as the "equalization fee."

(d) As used in this title the term "sale" includes an exchange for money, other property, or for money and other property, but does not include a transfer to an association of producers of agricultural products, whether or not incorporated, by a member or stockholder thereof, for the purpose of a sale by such association or corporation for such member or stockholder.

PAYMENT AND COLLECTION OF THE FEE

Sec. 303. (a) Whenever a special emergency in respect of any agricultural commodity has been ascertained and proclaimed, and until the termination of such emergency, under section 22, the equalization fee shall be paid and collected upon every sale of such commodity by or on account of the producer thereof.

(b) It shall be the duty of every purchaser of any such commodity to tender, and of every producer (or the person making the sale on his account) to accept, as a part of the purchase price an amount of scrip, prepared and offered for sale as provided in section 304, equal to the total equalization fee to be paid upon such sale. If any such purchaser fails to make such tender, it shall be the duty of such producer or person to demand such scrip. Such scrip shall be evidence of a beneficial interest in the equalization fund for the commodity, and the holder shall be entitled to the dividends declared therefrom, as provided in section 305.

(c) Any person who fails or refuses to tender or to accept or demand scrip in violation of subdivision (b) shall be liable for the equalization fee and to a penalty equal to one-half the amount of such fee. Such fee and penalty may be recovered together in a civil suit brought by the corporation and shall be covered into the proper equalization fund of the corporation.

(d) In lieu of such scrip the corporation may provide for the filing, under oath, of monthly returns, in such form and under such regulations as it may prescribe, by purchasers and producers and for the payment of such equalization fees directly to the corporation.

PREPARATION AND ISSUANCE OF SCRIP

Sec. 304. (a) For the payment of the equalization fee the corporation shall prepare and issue scrip in such forms and denominations and subject to such terms and conditions as the corporation may prescribe.

(b) The Secretary of the Treasury, upon request of the corporation, is authorized to have such scrip prepared at the Bureau of Engraving and Printing, but the cost thereof shall be paid by the corporation.

(c) The corporation shall furnish to the Postmaster General, without prepayment, a suitable quantity of scrip to be distributed to and kept on sale by the various postmasters in the United States. The Postmaster General may require each such postmaster to give additional or increased bond as postmaster for the value of the scrip so furnished. The cost of such bond shall be paid by the corporation. Each such postmaster shall deposit the receipts from the sale of such scrip to the credit of the Postmaster General at such times and in such form as he may by regulation prescribe. The Postmaster General shall transfer to the corporation such part of such receipts as the corporation may from time to time demand.

(d) Any such postmaster may redeem, and refund the amount paid for, any such scrip not used, out of any money received from the sale of scrip.

EQUALIZATION FUND AND DIVIDENDS

Sec. 305. (a) In accordance with regulations prescribed by the corporation there shall be established in the treasury of the corporation for each basic agricultural commodity and for each operation period, an equalization fund, into which the receipts of all equalization fees for such operation period in respect of such commodity shall be deposited.

(b) From such fund there shall be disbursed—

- (1) All operation expenses of the corporation in respect of such commodity attributable to such a period; and
- (2) All losses of the corporation from its transactions in respect of such commodity in foreign markets.

(c) At such time as the corporation deems advisable after the expiration of such period, a dividend shall be paid ratably to each holder of scrip from the balances remaining in such fund. Any moneys in such fund after the payment of such dividends shall be transferred to the treasury of the corporation, to be used for such purposes as the commission may direct.

(d) Such dividend shall be paid to the holder of such scrip upon presentation by him of such scrip to any postmaster within such time and subject to such regulations as the corporation may prescribe.

(e) The corporation shall make available to postmasters such money of the corporation in their custody and in the custody of the Postmaster General as may be necessary to pay any such dividends.

TITLE IV. MISCELLANEOUS PROVISIONS

ADJUSTMENT OF RATES OF DUTIES

Sec. 401. (a) The President is authorized to direct the United States Tariff Commission or the Secretary of Agriculture to make investigations from time to time in order to carry out the provisions of this section, and to determine the rate of duty upon any agricultural commodity, or upon any derivative of or competitive substitute for such commodity, necessary to maintain, or to assist in maintaining, the domestic price of such commodity at the level of the ratio prices fixed therefor.

(b) Whenever a special emergency in respect of any agricultural commodity has been ascertained and proclaimed under section 22, the President may by proclamation, from time to time, declare the rate of duty so determined. On and after the thirtieth day after such proclamation and during the existence of such emergency, such rate of duty shall be levied, collected, and paid (in lieu of, and in the same

manner as, any rate of duty theretofore levied, collected, and paid) upon such commodity, derivative, or substitute imported from any foreign country into the United States or into any of its possessions (except the Philippine Islands, the Virgin Islands, and the Islands of Guam and Tutuila).

(c) In making any such investigation, the Tariff Commission or the Secretary of Agriculture (as the case may be) shall give reasonable public notice of its hearings and reasonable opportunity to parties interested to be present, to produce evidence, and to be heard (including the right of cross-examination), may adopt reasonable procedure, rules, and regulations, and exercise any of the powers conferred by law on the Tariff Commission.

INFORMATION FOR PRODUCERS

Sec. 402. The commission, and after the termination of its existence, the Secretary of Agriculture, is hereby authorized and directed (a) to collect and disseminate information concerning supply and demand for agricultural commodities throughout the world, including the conditions affecting such commodities, and (b) to advise producers (with a view to the proper adjustment of production to accord with probable consumption) as to acreage or quantities that it may appear wise to produce"

The following statistics furnish a background typical of other commodities provided for under this bill.

**AVERAGE WHOLESALE PRICES OF COMMODITIES¹
1905-1922**

Year and Month	CORN: CASH, CONTRACT GRADES	COTTON: MIDDLING, UPLAND, NEW YORK	MUTTON: DRESSED	INDEX NUMBER OF THE BUREAU OF LABOR STA- TISTICS FOR ALL COM- MODITIES
	per Bushel	per Pound	per Pound	Base: Estimated Value in 1913 = 100
1905—January . . .	\$0.429	\$0.072	\$0.082	83
February . . .	.444	.078	.093	84
March . . .	.475	.081	.095	84
April . . .	.479	.079	.089	84
May . . .	.523	.083	.085	83
June . . .	.547	.090	.081	83
July . . .	.572	.111	.087	83
August . . .	.544	.109	.081	85
September ..	.529	.108	.084	85
October . . .	.521	.104	.085	86
November ..	.476	.115	.085	87
December . . .	.471	.121	.089	87
1906—January . . .	.421	.118	.090	86
February . . .	.401	.110	.092	86
March . . .	.418	.113	.089	86
April . . .	.465	.117	.089	86

¹ Prices taken from bulletins of the Bureau of Labor Statistics on Wholesale Prices

Year and Month	CORN: CASH, CONTRACT GRADES	COTTON: MIDDLEBROOK, UPPLAND; NEW YORK	MUTTON: DRESSED	INDEX NUMBER OF THE BUREAU OF LABOR STA- TISTICS FOR ALL COM- MODITIES
	per Bushel	per Pound	per Pound	Base: Estimated Value in 1913 = 100
1906—May	\$0.489	\$0.118	\$0.096	87
June .....	.516	.111	.098	87
July .....	.517	.109	.090	87
August .....	.497	.103	.088	87
September ..	.479	.098	.093	88
October .....	.458	.109	.092	88
November .....	.446	.108	.088	90
December .....	.445	.107	.089	91
1907—January .....	.412	.109	.086	92
February .....	.434	.110	.085	93
March .....	.441	.112	.091	93
April .....	.468	.111	.100	93
May .....	.530	.120	.104	94
June .....	.533	.131	.097	94
July .....	.541	.132	.081	94
August .....	.565	.133	.084	94
September .....	.616	.127	.083	95
October .....	.618	.115	.083	95
November .....	.586	.110	.083	93
December .....	.593	.118	.079	91
1908—January .....	.594	.117	.089	93
February .....	.578	.116	.093	92
March .....	.636	.110	.109	92
April .....	.667	.101	.113	91
May .....	.746	.110	.103	90
June .....	.702	.116	.093	90
July .....	.746	.113	.081	90
August .....	.785	.104	.079	90
September .....	.796	.093	.066	90
October .....	.736	.092	.070	90
November .....	.638	.094	.068	90
December .....	.591	.093	.073	91
1909—January .....	.591	.096	.079	95
February .....	.629	.099	.082	95
March .....	.660	.098	.090	95
April .....	.691	.105	.096	95
May .....	.749	.113	.113	96
June .....	.744	.115	.096	96
July .....	.709	.128	.092	96
August .....	.680	.128	.086	96
September .....	.676	.130	.083	98
October .....	.607	.139	.081	98
November .....	.627	.148	.086	100
December .....	.641	.153	.096	101
1910—January .....	.650	.149	.099	100
February .....	.644	.147	.109	100
March .....	.625	.150	.133	101
April .....	.582	.151	.141	100
May .....	.603	.155	.122	99
June .....	.588	.154	.106	99

Year and Month	CORN CASH, CONTRACT GRADES	COTTON MIDDLEBROOK, UPPLAND, NEW YORK	MUTTON GROSSTO	INDEX NUMBER OF THE BUREAU OF LABOR STA- TISTICS FOR ALL COM- MODITIES
	per Bushel	per Pound	per Pound	Base: Estimated Value in 1913 = 100
1910—July	\$0.620	.156	.093	98
August .....	.628	.167	.088	99
September .....	.553	.139	.080	99
October .....	.495	.145	.083	98
November .....	.500	.148	.070	98
December .....	.470	.150	.073	98
1911—January .....	.468	.149	.071	94
February .....	.468	.143	.077	94
March .....	.470	.145	.084	95
April .....	.500	.148	.085	94
May .....	.536	.158	.087	94
June .....	.552	.155	.076	94
July .....	.636	.141	.082	94
August .....	.639	.125	.074	95
September .....	.673	.114	.074	95
October .....	.721	.096	.070	95
November .....	.723	.094	.058	95
December .....	.693	.094	.068	95
1912—January .....	.672	.095	.076	98
February .....	.645	.104	.074	98
March .....	.680	.106	.093	100
April .....	.770	.115	.112	101
May .....	.802	.117	.111	102
June .....	.741	.117	.093	101
July .....	.730	.125	.087	101
August .....	.774	.119	.078	101
September .....	.742	.117	.076	101
October .....	.646	.111	.069	102
November .....	.553	.124	.069	102
December .....	.485	.131	.072	102
1913—January .....	.491	.131	.090	97
February .....	.501	.128	.102	99
March .....	.508	.126	.108	100
April .....	.557	.123	.133	101
May .....	.571	.120	.115	98
June .....	.601	.122	.103	99
July .....	.624	.124	.104	101
August .....	.740	.121	.094	101
September .....	.749	.135	.097	102
October .....	.609	.140	.095	101
November .....	.725	.137	.093	100
December .....	.703	.130	.094	99
1914—January .....	.614	.127	.098	99
February .....	.621	.128	.101	100
March .....	.650	.133	.105	99
April .....	.668	.132	.106	99
May .....	.700	.135	.108	97
June .....	.708	.135	.099	96
July .....	.710	.131	.095	98
August .....	.808	.120	.099	105

Year and Month	CORN: CASH, CONTRACT GRADES	COTTON, MIDDLING, UPLAND; NEW YORK	MUTTON: DRESSED	INDEX NUMBER OF THE BUREAU OF LABOR STA- TISTICS FOR ALL COM- MODITIES
	per Bushel	per Pound	per Pound	Base: Estimated Value in 1913 = 100
1914—September ..	\$0.781	....	\$0.097	104
October .....	.731	..	.096	99
November .....	.699	\$0.076	.110	98
December .....	.644	.076	.100	97
1915—January .....	.719	.083	.097	99
February .....	.756	.085	.104	103
March .....	.724	.090	.116	102
April .....	.750	.103	.131	103
May .....	.769	.098	.139	105
June .....	.739	.097	.104	103
July .....	.783	.092	.109	105
August .....	.787	.094	.102	101
September .....	.730	.110	.094	100
October .....	.635	.125	.096	103
November .....	.652	.119	.097	104
December .....	.717	.124	.101	108
1916—January .....	.761	.124	.111	112
February .....	.763	.117	.118	115
March .....	.742	.119	.120	119
April .....	.760	.121	.131	122
May .....	.744	.129	.142	124
June .....	.739	.129	.123	123
July .....	.808	.130	.131	124
August .....	.855	.145	.130	129
September .....	.869	.158	.124	132
October .....	.955	.181	.123	139
November .....	.983	.201	.120	146
December .....	.919	.182	.125	146
1917—January .....	.982	.176	.137	150
February	1.016	.163	.148	154
March	1.123	.186	.155	164
April	1.397	.203	.165	177
May	1.625	.208	.188	190
June	1.716	.255	.168	191
July	2.044	.261	.145	192
August	1.921	.259	.157	198
September	2.071	.227	.180	196
October	1.968	.281	.191	196
November	2.056	.299	.178	197
December	1.709	.306	.188	194
1918—January	1.775	.324	.192	196
February	1.750	.319	.189	198
March	1.725	.339	.195	200
April	1.665	.317	.246	202
May	1.625	.275	.249	201
June	1.600	.304	.224	202
July	1.665	.312	.206	206
August	1.700	.345	.209	212
September	1.600	.358	.193	216
October	1.385	.325	.151	211

Year and Month	CORN: CASH, CONTRACT GRADES	COTTON, MIDDLING, UPLAND, NEW YORK	MUTTON: DRESSED	INDEX NUMBER OF THE BUREAU OF LABOR STA- TISTICS FOR ALL COM- MODITIES
	per Bushel	per Pound	per Pound	Base: Estimated Value in 1913 = 100
1918—November ...	\$1.350	\$0.205	\$0.163	211
December ...	1.445	.304	.150	213
1919—January ...	1.401	.296	.176	208
February ...	1.295	.263	.191	202
March ...	1.485	.273	.214	207
April ...	1.609	.290	.220	213
May ...	1.772	.309	.204	215
June ...	1.766	.348	.165	212
July ...	1.020	.351	.159	223
August ...	1.938	.320	.155	223
September ...	1.553	.311	.118	213
October ...	1.400	.355	.126	214
November ...	1.408	.395	.130	222
December ...	1.480	.394	.140	230
1920—January ...	1.503	.393	.158	238
February ...	1.450	.388	.206	233
March ...	1.579	.414	.106	236
April ...	1.706	.424	.251	248
May ...	1.995	.413	.195	251
June ...	1.851	.393	.172	248
July ...	1.549	.410	.170	242
August ...	1.541	.360	.139	231
September ...	1.315	.301	.118	223
October ...	.888	.226	.114	203
November ...	.807	.190	.124	185
December ...	.755	.155	.108	166
1921—January ...	.682	.167	.113	159
February ...	.665	.139	.094	144
March ...	.649	.118	.116	138
April ...	.578	.121	.134	131
May ...	.616	.129	.136	129
June ...	.614	.120	.093	123
July ...	.614	.124	.104	124
August ...	.570	.139	.090	125
September ...	.539	.204	.088	126
October ...	.470	.197	.093	127
November ...	.482	.182	.075	127
December ...	.482	.183	.111	126
1922—January ...	.484	.179	.120	123
February ...	.572	.181	.123	129
March ...	.575	.183	.138	130
April ...	.588	.181	.138	129
May ...	.618	.208	.133	132
June ...	.609	.221	.096	133
July ...	.643	.223	.116	137
August ...	.622	.219	.113	133
September ...	.635	.215	.114	134
October ...	.691	.228	.110	138
November ...	.722	.256	.118	140
December ...	.734	.257	.118	142

EXPORTS AND IMPORTS OF CORN AND COTTON
1913-1923¹

EXPORTS				
Year	CORN		COTTON	
	No. of Bushels	Value	Running Bales	Value
1913.....	45,287,000	\$ 26,515,000	8,610,000	\$ 575,488,000
1914.....	15,626,000	12,246,000	6,320,000	343,905,000
1915.....	48,264,000	38,480,000	8,359,000	417,013,000
1916.....	53,548,000	46,360,000	7,030,000	545,229,000
1917.....	52,168,000	72,937,000	4,819,000	575,307,000
1918.....	39,899,000	69,269,000	4,112,000	674,123,000
1919.....	11,192,000	18,624,000	6,557,000	1,137,371,000
1920.....	17,761,000	26,454,000	6,159,000	1,136,409,000
1921.....	129,055,000	92,871,000	6,474,000	534,242,000
1922.....	163,609,000	115,095,000	6,114,000	673,250,000
1923.....	42,188,000	36,806,000	5,279,000	807,102,000

IMPORTS				
Year	CORN		COTTON	
	No. of Bushels	Value	Pounds	Value
1913.....	5,005,000	\$ 3,389,000	104,980,000	\$ 19,480,000
1914.....	15,821,000	9,676,000	158,094,000	23,074,000
1915.....	6,499,000	3,717,000	202,785,000	25,880,000
1916.....	2,155,000	1,235,000	192,386,000	37,052,000
1917.....	1,654,000	1,983,000	138,615,000	38,683,000
1918.....	1,990,000	1,976,000	112,684,000	41,624,000
1919.....	11,213,000	10,967,000	175,358,000	71,886,000
1920.....	7,784,000	9,207,000	209,094,000	138,744,000
1921.....	164,000	199,000	138,948,000	32,902,000
1922.....	113,000	116,000	186,181,000	47,682,000
1923.....	203,000	229,000	187,365,000	49,443,000

DOMESTIC PRODUCTION OF CORN AND COTTON²

1913-1922

Year	CORN 1,000 Bushels	COTTON Running Bales	
1913.....	2,446,988		14,156,000
1914.....	2,672,804		16,135,000
1915.....	2,994,793		11,102,000
1916.....	2,506,927		11,450,000
1917.....	3,065,233		11,302,000
1918.....	2,502,665		12,041,000
1919.....	2,811,302		11,421,000
1920.....	3,208,584		13,440,000
1921.....	3,068,569		7,954,000
1922.....	3,890,712	(Est.)	9,964,000

¹ Monthly Summary of Foreign Commerce of the United States.

² Year Book of the U. S. Department of Agriculture, 1922.

33. STAPLE COTTON COOPERATIVE ASSOCIATION—ORGANIZATION OF CORPORATION TO FINANCE COTTON PRODUCTION¹

In 1921 the Staple Cotton Cooperative Association was organized among the cotton growers in the lowlands along the Mississippi River, known as the Delta section of the Mississippi. Its purpose was to market cotton cooperatively for its members, disposing of portions of the crop during each month of the year. Growers formerly sold their entire crop in the fall after ginning. The members agreed to sell through the association all cotton owned, controlled, or acquired by them. During 1922-1923, 169,000 bales of cotton were sold, for which members received approximately \$25,000,000. In 1923 there were more than 2,000 members, who grew about one-third of the cotton in that section. From 1921-1923 the association sold 325,000 bales of cotton and \$41,500,000 was distributed to members.

As soon as the cotton was received, a preliminary advance of \$85 or \$100 per 500-pound bale, according to the tentative grading, was made to members. During the ensuing 12 months the cotton was sold by a sales organization maintained by the association. Final payment to each grower was made at the end of the year according to the price received from the purchasers of his cotton. A deduction of 3% of the sales price was made to provide for operating expenses, and the amount remaining in excess over actual expenses during the year was returned to the members.

In November, 1923, a committee of the organization, appointed to report on the organization of a credit corporation for the purpose of financing cotton production in the Delta, submitted the following plan to facilitate granting credit during the growing season:

The wide-spread demand for broader and more liberal agricultural credits during the past few years has found response in the enactment of considerable remedial federal legislation. Of these statutes, the Rural Credits Act of 1923 is by far the most ambitious, both in the means offered for relief and in the scope of its potential results. Wisely administered, its provisions afford substantial ground of encouragement to every branch of American agriculture. Without stopping to discuss the act in detail, your Committee wishes to express the opinion that through it the cotton growers, bankers, and general business interests of the

¹*Letters*, Vol. 1, p. 113.

Delta may find relief from a situation which promises to be quite as serious as any which has confronted this territory in recent years.

We need not go into a general review of this situation. Every banker and business man in the Delta is familiar with it. Before we have recovered from the disaster of 1920, we find ourselves facing the results of one of the shortest crops in the history of staple cotton production. It is idle to talk about better prices as an offset to this shortage. Prices never have been adequate to meet such conditions, and probably never will be. The trade of the world cannot be called upon to shoulder this burden. It must be borne by those nearest to it, and therefore most directly and immediately affected and concerned.

As is the case in all such crises the problem is fundamentally one of weathering the storm; of bridging the chasm between abnormal and normal conditions. So long as our natural resources remain unimpaired and our people retain their courage, there is no question about our ultimate recuperation. But courage cannot be sustained without hope; and where there is no promise, there is no hope.

If our people cannot receive definite assurances of ways and means of financing their efforts through this period, the necessary effort cannot and will not be made.

As your committee sees it, the question is a far more vital one than that of merely meeting current obligations. It is primarily one of future operations. Unless the future is made secure, there is no possibility of providing for the present.

The cotton crop of the Delta requires substantially twenty millions of dollars for its financing through the growing period alone. During the current year between three and four millions of this sum were represented by idle capital, contributing nothing to current production, but merely representing an accumulation of unliquidated obligations, "carry overs" from previous years. This carry over into 1924, in the nature of things, is likely to be augmented, rather than decreased.

The Staple Cotton Cooperative Association's annual analysis of Delta crop mortgages for 1923 shows that the volume owed to Delta banks was a little more than $13\frac{1}{2}$ millions (\$13,698,630). Banks outside the Delta held \$1,324,619 of the total. Individuals held crop mortgages to the amount of \$3,924,827. Cotton factors had \$947,956. This aggregates nearly 20 millions: \$19,896,033. It would seem that a crop approximating even \$40,000,000 in value, and the Delta crop always exceeds this figure, would be ample to liquidate these obligations. But experience is definitely to the contrary. The enormous volume of the annual drain for interest on public and private debts, fire and life insurance premiums, automobile purchases and maintenance, taxes and the thousand and one other demands, serves to exhaust our production earnings, without creating reserves, or even meeting current crop obligations.

The total capital and surplus of Delta banks, as of June 30, 1923, was only \$7,327,222. The burden put upon the resources of our banks, in the matter of financing the cotton crop, is far too great, when we

consider all the other legitimate commercial demands for which they have to provide. Our survey of the situation suggests that in many instances, at least, this burden will be too great to be carried without assistance. In short, we are brought directly to a realization of the immediate existence of just such a condition as the Rural Credits Act of 1923 was intended to relieve.

This act provides for the organization of a Credit Corporation which may finance a growing crop. The paid in capital of such a corporation should be not less than \$100,000 to begin with. It may do a business not to exceed 10 times its capital stock. The corporation should be a non-profit concern, and should be operated at a minimum expense. To secure advances for crop purposes a member would have to subscribe to the capital stock in an amount equal to 10% of the sum to be borrowed. The security taken would be such capital stock, in addition to a first mortgage on the crop to be grown and on the live stock and equipment of the borrower. The amount to be loaned should be based upon 50% of the average value of the three immediately preceding crops, not to exceed 75% of the value of the smallest of the three. There would have to be careful field service in the way of inspection, and so forth. The funds loaned would be advanced in monthly instalments, through seven or eight months. Right to discontinue such advances for cause at any time would have to be reserved, as well as the right to enter upon the property of the borrower for the purpose of carrying the crop to completion. The borrower would have to be or become a member of the Staple Cotton Cooperative Association.

The agencies provided by the Rural Credits Act of 1923 for providing funds for such credit corporations are the Federal Intermediate Credit Banks located at the headquarters of the previously existing Federal Farm Land Banks, and under the same management. The Intermediate Credit Banks act as banks of discount for the credit corporations and operate through the Federal Farm Loan Board, at Washington. This board furnishes the Intermediate Credit Banks with funds through the sale of debentures against the paper approved by them, which paper is received from the Credit Corporations. This system of financing at once suggests the necessity for the exercise of the utmost degree of caution, conservatism and good management.

The Credit Corporation would charge its borrowers a rate of interest not to exceed 1½% more than that charged by the Intermediate Credit Bank. This would probably mean not more than 7% per annum to the grower, and only for the time the money was made available.

It should be strongly emphasized that this Credit Corporation would discharge none of the ordinary functions of commercial banks. It would receive no deposits. On the contrary, it would enable its borrowers to make monthly deposits with their local banks. The sole purpose would be to supplement, as far as might be possible under the necessary limitations of the system, the resources of local banking institutions.

This committee has carefully considered the matter of raising the necessary capital stock for such a Credit Corporation for the Delta. The chief purpose is to bring outside capital into the Delta. But it is also desirable to provide this capital stock without sending our own funds away from home. We have evolved a plan which we believe will accomplish both these objects. This is to permit the use by members of their interest in the Advance Fund of the Staple Cotton Co-operative Association in the purchase of capital stock in the Credit Corporation. Cash could be loaned by the Association to members on their notes, secured by their Advance Fund Certificates.¹ There could be no possible question of security involved, and such loans would to this extent assist the Association in earning 6% interest which it is required to pay annually on these certificates.

Your committee is of the opinion that the proposed Credit Corporation should have a board of directors sufficiently large to give the entire Delta thorough representation. In order to secure the tax exemption necessary to economical administration, the corporation would have to be operated on a non-profit basis, by members and directors who are bona fide growers of cotton. Members and directors need not necessarily be borrowers. If they can qualify as growers, they may subscribe to only a nominal amount of stock, instead of the 10% required of borrowers.

¹A deduction of 2% of gross proceeds from the sale of cotton was made and credited to an advance fund which served as a reserve. Since this fund could not be debited while other obligations of the association were outstanding it served as a capital stock fund. A certificate of deposit which bore 6% interest was given each member for the amount which had been deducted from receipts from the sale of his cotton and deposited in the fund. These certificates were not negotiable but could be assigned.

IX

OPERATING PROBLEMS

A. PURCHASING AND INVENTORY POLICIES IN PROSPERITY AND DEPRESSION

I. HAPGOOD MANUFACTURING COMPANY—EFFECT OF DECREASE IN DEMAND ON OPERATING POLICIES¹

The Hapgood Manufacturing Company produces bleached sulphite pulp and writing paper. The mills are located in northern Wisconsin in three groups: one at Andrews, one at Billings, and one at Smithstown. Andrews, a town of 30,000 inhabitants, has a variety of manufacturing establishments. The population of Smithstown is 20,000, and it has three other industries besides paper manufacturing. Billings is a newly settled town of about 2,000 inhabitants in which the Hapgood Manufacturing Company is the only manufacturing enterprise. The Billings plant, which is located in the woods near the source of supply of raw material, consists of a sulphite pulp mill and a paper mill with auxiliary departments. At Smithstown is a sulphite pulp mill and a paper mill. The Andrews plant includes a sulphite mill, paper mill, rag pulp mill, box factory, and other departments.

The combined production of the three pulp plants amounts to 70,000 tons annually, of which about 31,500 tons are consumed by the company's paper mills; the balance of the pulp is sold in the open market. The combined output of the paper mills is approximately 44,000 tons per year. The plants of the company cover a ground area of 20 acres and a floor space slightly in excess of 34 acres. The company has a contract for power for the Andrews group with the Andrews Electric Light and Power Company, which on June 1, 1920, had 10 years to run. The timberlands owned in fee consist of approximately 200,000 acres, and the company controls through stock ownership of other companies about 192,000 acres of timber lands. In addition, the company has stumpage contracts covering a large additional

¹*Letters*, vol. 1, p. 219; vol. 2, p. 44.

acreage. The timberlands for the most part are accessible to the mills of the company by river or rail. Early in 1920, the company contracted to buy a large supply of pulp wood, so as to reserve its own supply for later use.

In 1916, the company began to install a modified form of the Taylor System in its production department in order to systematize the execution of work. The system was in successful operation by 1919. As a result production was greatly increased and, in spite of a large overhead expense, the total manufacturing cost was reduced. By means of this system the company is able to plan the work completely before a single move is made. A route sheet giving the names and order of all the operations which are to be performed is first made out, together with clearly written instruction cards for each operation. The best method for performing each operation has already been determined by the company and is included on each instruction card. A requisition on the stores department, stating the kind and quality of the materials to be used and where they are to be moved, also is made out for each operation. Thus, the order and assignment of all work or routing, as it is called, is conducted by a central planning or routing department. In this way the control of all operations in the production departments, the progress and the order of the work are brought back to a central point.

Modern methods of accounting have been installed which show the manufacturing expense account for the year by 13 periods of 4 weeks each, instead of 12 monthly periods. At the expiration of each of these periods a profit and loss statement and a balance sheet showing assets and liabilities are drawn up. A cost department is also maintained from which detailed comparative figures for each period are obtained.

The Hapgood Manufacturing Company has a highly organized labor department that has been in successful operation for 10 years. Considerable welfare work has been carried on, a pension system installed, and an active and efficient safety committee organized. There has never been a strike in either plant, and many of the workers have been in the employ of the company for 15 years or more. The company is particularly proud of the fact that it has always given steady employment. It has an agreement with its workers to pay them a half-base wage if they are

laid off because of curtailment of operations, the company, however, reserving the right, on 30 days' notice, to cancel this agreement.

On January 1, 1921, the Hapgood Manufacturing Company had no funded debt. The authorized capital stock consisted of \$1,500,000 common, \$5,750,000 7% cumulative first preferred, and \$1,750,000 second preferred; par common, \$5; par first and second preferred, \$100. The provisions under which the first preferred stock was issued are as follows:

"First preferred stock is subject to redemption as a whole or in part for the sinking fund by lot at 110 and accrued dividend on four weeks' notice. It has preference as to earnings with respect both to dividends and to sinking fund, and as to assets in liquidation, over second preferred and common. In case of voluntary liquidation it is entitled to receive \$110 a share and accrued dividends, and par and accrued dividends in case of involuntary liquidation, in preference over second preferred and common. No bonds or notes having more than one year to run shall be issued or guaranteed, and no mortgage, lien, or other encumbrance shall be placed on property without consent of 75% in interest of both classes of preferred stock, voting separately. Second preferred has preference as to assets as well as dividends over common, in case of voluntary or involuntary dissolution, being entitled to be paid \$100 per share after liquidation of first preferred and before payment to common. No dividends shall be declared or paid on second preferred or common if "net quick" is less than one and one-half times outstanding preferred stock or net assets below \$250 for each share of first preferred then outstanding. No additional first preferred stock can be issued except at or above par for cash and then only when net earnings for each two of two preceding fiscal years have been at least twice annual dividend requirements of outstanding preferred stock, including proposed new issue; this restriction as to net earnings may be suspended with consent of two-thirds of first preferred stock. The company must expend each year to purchase first preferred stock (if purchasable at not exceeding \$110 per share) at least 10% of its net earnings remaining after payment of 7% cumulative first preferred dividend. If more than 10% be expended in any one year, the excess may be applied to reduce the amount which must be expended during any subse-

quent year. Upon default for any one year in maintaining net assets equal to first preferred or in case of default of any quarterly dividend on first preferred that issue shall be entitled to vote until such default is remedied. Except in this event first preferred has no voting power."

First preferred dividend payable quarterly, February, May, August, and November 1; second preferred quarterly, January, April, July, and October 1. On common, initial quarterly dividend of 50 cents a share was paid January 1, 1920; April 1, 1920, 50 cents and 50 cents extra; July 1, 1920, 50 cents and 50 cents extra.

The items of the balance sheet on January 1, 1921, follow:

HAPGOOD MANUFACTURING COMPANY—BALANCE SHEET AS OF
JANUARY 1, 1921

ASSETS	
Cash	\$ 550,717.34
Investments—Bonds	123,265.67
Investments—Subsidiary and Allied Companies	435,209.72
Accounts Receivable	2,560,433.85
Timberlands	1,344,401.55
Inventories—Merchandise and Supplies	5,863,850.11
Advances—Pulp Wood	2,772,825.06
Plant	13,124,774.65
Miscellaneous	25,968.20
Prepaid Expenses	273,627.27
	<u>\$27,075,073.42</u>
LIABILITIES	
Accounts Payable	\$ 557,283.23
Notes Payable	2,183,718.00
Reserve for Depreciation of Plants	3,248,637.66
Capital Stock:	
First Preferred	\$5,750,000.00
Less Stock in Treasury	<u>265,600.00</u> 5,474,400.00
Second Preferred	1,750,000.00
Common	1,267,300.00
Surplus	12,593,734.53
	<u>\$27,075,073.42</u>

The bond and ledger paper that this company manufactures is sold entirely to jobbers and retailers as medium-price paper. About 60% of the mills' output is sold under jobbers' water-

marks. Altogether, several hundred watermarks are placed on the paper that this company manufactures. During the war, the company cooperated with the Conservation Division of the War Industries Board in reducing the number of varieties and styles of its product and as a result by January 1, 1921, 75% of the paper sold under its own watermarks had been standardized. Direct sales have never been made to retailers and large consumers. The company advertises its own watermarks nationally, and the cost of this national advertising calls for a large annual appropriation. A selling office is maintained at the Andrews plant, but the main sales headquarters are at Chicago with a branch in New York City. The company has on its pay-roll a general sales manager and nine salesmen.

For the first six months of 1920 the company experienced the largest business in its history. On June 1 of that year orders were booked for full capacity of both plants for the next six months and the selling organization was forced continually to refuse orders. At this time prices of raw materials and finished product were higher than they ever had been in the history of the paper industry. There was considerable general talk about a shortage in raw materials and grave concern over the future supply of pulp wood. Because of this, in May, 1920, the company contracted for enough pulp wood to last through June of 1921, at the rate of production that existed at its pulp mills for the first six months of 1920.

About October, 1920, the company started to receive cancellations, and sales for spring delivery declined 50%. By January 1, 1921, the demand for fine and medium-grade papers had practically ceased. At this time the company still had unfilled a few small orders from customers. It had in stock a normal supply of finished paper of all lines, while for one or two lines it had on hand a small surplus stock. There was no demand for bleached sulphite pulp, and the company was making no shipments against contracts. The pulp mills were being operated only on part time, that being sufficient to produce the pulp required by its own paper mills.

Because of the condition that existed the president of the Hapgood Manufacturing Company on January 5, 1921, asked to have estimated costs drawn up and plans outlined for two possible courses of action—(a) complete shut-down of all plants; (b) the

pulp mills operating at a capacity sufficient to fill the pulp requirements of the paper mills.

The production of a surplus stock of pulp was not considered advisable because of the bulky nature of the finished product. From the start the executives believed it to be better to use all existing space for the storage of paper, which occupies far less room per unit of weight. When careful estimates had been compiled based on normal operations for a four-week period, it was found that with a complete shut-down of the plants an expense of practically \$352,000 would have to be met. With no production to cover this expense it would be necessary to absorb it from the profits realized during the subsequent revival of operations.

A comparison between the cost of operating the plants at a normal rate of production with the cost of closing down entirely is set forth in Table 17, below. The table provides for the normal operation of the paper mills, with the pulp mills at Andrews and Smithstown operating approximately 50% of capacity and a 40% pulp production at Billings, (four-week period).

TABLE 17—COST OF SHUT-DOWN COMPARED WITH COST OF NORMAL OPERATION OF PLANTS

Mill	Cost of Shut-down	Additional Costs Required to Operate	Per Cent Increase
Andrews Paper	\$118,578	\$ 47,124	40
Andrews Pulp	79,692	11,070	14
Billings Paper	20,904	12,684	61
Billings Pulp	33,681	6,855	20
Smithstown Paper	59,289	23,562	40
Smithstown Pulp	39,849	5,535	14
Total of all mills	\$351,993	\$106,830	30

After examining the figures an executive made the following statement: "Expenditures made during a shut-down are lost altogether. The figures drawn up by our cost department show moreover that to operate at normal capacity, producing surplus stock, would mean the expenditure of only 30% additional funds.

"Our present inventories of raw materials and supplies on hand are more than sufficient to operate the plants at normal capacity for several months and in the case of many raw materials, much longer. So far as raw materials are concerned, therefore, no new or additional funds would be required, as the money has already been invested and to operate the plants would merely mean trans-

ferring inventory from the raw materials and supply accounts to the finished stock accounts. The interest on additional funds and a possible additional insurance cost, our accountant tells us, would be somewhat higher than normal, but the only substantial additional charge resulting from operating at a normal rate rather than ceasing operations would be the increased storage charges. Furthermore, there would be a heavy expense in starting the mills up again, when business warrants, due to probably heavy initial repairs, gathering crews, and building up the organization, as well as loss on second quality pulp and paper produced in starting under these conditions. Without a doubt, the pulp would run dirty at the outset and be of generally poor quality until the operation had been continued for some little time and the regulation of the process again secured. This would mean the production of second-quality pulp, which would have to be sold at a discount from the regular market price for first-grade normal pulp. I believe troubles of a similar nature would be experienced in the paper mill, and the first runs of paper would doubtless have to be jobbed at a considerable sacrifice."

After carefully reviewing the cost figures submitted, the executives decided that it would be more desirable to continue operating and producing surplus stocks than it would be to shut down. Their reasons, financial and otherwise, briefly were as follows: First, steady employment and full wages would be given to many people who would otherwise be laid off on half-base wages or about 35% of their normal earnings. It was estimated that in the first four-week period this half-base wage payment would amount to approximately \$78,000. Second, the executives believed that when the business revival came, which they believed was due within a year, there would be a subsequent peak demand for paper because of depleted stocks. By operating continuously the Hapgood Manufacturing Company would be in a position to render its customers better service than ever before, not only on their own water-marks and plain paper, but on the company's water-marks as well. It would be in a position to give immediate delivery from stock on its own water-marks and on plain paper, and because the machines would be free of the company's marks, it could more quickly produce customers'

marks. The executives believed that by producing surplus stock, instead of shutting down, they would stock up for the next peak demand, and the result in the end would be a larger volume of business than would otherwise be the case.

Another advantage in operating the plants considered by the executives was the effect on the "net quick" of the company. With the mills in operation, even with no sales, most of the money expended would be tied up in inventories, and the "net quick" would not suffer appreciably. With the mills shut down and no production, the "shut-down cost" would reduce the cash by approximately \$352,000, which would cause a reduction in "net quick." It was estimated that operating the mills for one four-week period, without orders, even if the finished paper was sold at 20% less than the average gross selling prices for the period ending December, 1920, would result in a small final net profit as compared with a loss of approximately \$352,000 if the plants were shut down flat. It was thought that the stock would probably not have to be stored a year before it was sold and that the selling price might not suffer the 20% reduction.

On April 1, 1921, the executives of the Hapgood Manufacturing Company again faced a situation which called for careful consideration and prompt decision. Sales for the first three months of 1921 had amounted to only 25% of sales for the same period in 1920. All attempts to increase the sales had not resulted in any considerable amounts of business, and it did not appear possible to keep the mills in operation. Since January 1, the company had been building up a surplus stock of its regular standardized papers, until in April it reached the maximum decided upon, amounting in the aggregate to 25% of the total output of the plants for the year 1920.

The company had attempted to secure "make and hold" or consignment orders to be billed later at prices prevailing at the time of shipment whenever within the year 1921 that might be. The result of this attempt had been disappointing and only one small consignment order had been received. The company had also tried reducing considerably the prices both on paper and on pulp, but no particular revival of demand had resulted. The sales department had attempted to secure business by price guarantees against decline but the plan had met with comparatively little success.

Analyze the policies of the company in 1919, 1920, and in January, 1921, and determine what policies the executives should have established on April 1, 1921. Indicate how the results of these policies would affect the policies to be adopted in the summer of 1922; and state briefly what policies should have governed the company's business in 1923-24.

2. WAUKEGAN-LYMAN MANUFACTURING COMPANY—OPERATION AT NIGHT DURING A PERIOD OF HIGH CONSTRUCTION COSTS

In 1919, the Waukegan-Lyman Manufacturing Company operated 52,000 ring spindles and 18,000 mules. On the former were spun 30's, 40's, and 50's cotton yarn, which subsequently was woven into ginghams.¹ Coarser yarn was spun on the mules. For a long period this had been sold to a toweling manufacturer, who could not use the more tightly spun yarn from ring spindles.

Since the mules were old and uneconomical to operate, and occupied excessive space in the plant, the directors decided to dispose of them and to install 14,000 new ring spindles and 500 looms. By rearrangement of the plant, the new ring spindles and 234 looms could be accommodated in the existing buildings. Bids were received for the construction of an addition to the plant required for the remaining 266 looms, but the quotations were so high that the directors deemed it inadvisable to install all the equipment originally specified. The number of spindles necessary per loom varied according to the size of the yarn spun. Thirty spindles usually were sufficient to supply one loom, although fewer were adequate for coarser yarn. One spindle could produce from one-half to one pound of yarn per 48-hour week. After the installation in 1919 was completed, the Waukegan-Lyman Manufacturing Company had 66,000 ring spindles and 1,934 looms. Hence, since the output of 8,000 spindles had to be disposed of elsewhere, the company decided to sell it on the open market.

During 1920, 1921, and 1922, yarns and ginghams were manufactured with varying degrees of success. Because of the fluctuations in the industry, the mill was shut down for several months, and for another period it was operated part time. Until

¹A hank of number one cotton yarn weighed one pound and contained 840 yards. Thirties yarn was of such size that 30x840 yards weighed one pound.

the spring of 1923 the excess yarn was sold at a slight profit. At that time, however, the overproduction in the United States had depressed prices to such an extent that, if computations were based on current quotations for cotton, the company was unable to realize its manufacturing costs. Manufacturers who had produced yarn only were realizing that the market for cotton yarn was oversold and were installing looms to weave their product into cloth. In April, the Waukegan-Lyman Manufacturing Company had been offered 90 cents per pound for its excess yarn; whereas, if cotton was valued at its current market price, the manufactured yarn cost 94 cents per pound. The treasurer asserted that, although the company owned cotton which was purchased below the current market price, there was no reason to lose, by selling below cost, the increase in inventory values already gained. Two methods were considered by which to secure a profit on the additional output; the completion of the original construction program and the operation of a portion of the looms at night.

An investigation of construction costs revealed a level 5% below that of 1919; machinery prices were 10% lower than four years previous. Operation at night was feasible for the 234 new looms, which were run by individual motors. Power was furnished by the company's generating plant; connections also had been made with the lines of a neighboring industrial electrical company. Wages for night work were 10% above the normal day rate; it was possible to secure a few men who were willing to work under those conditions. Additional expense for supervision of workers was necessary, but the selling agent was convinced that the plant's entire potential output of ginghams could be sold at a profit.

Since the time was deemed unfavorable for the installation of the additional equipment originally planned, it was decided, in spite of the extra manufacturing expense, to employ night workmen and to operate as many of the 234 looms as possible, in order to reduce the surplus 6,000 pounds of yarn per week, which otherwise must be disposed of on the open market at a price far below current manufacturing costs. This decision was made because of the more favorable market for ginghams than for the surplus cotton yarn of the company.

3. THE STARRETT MILL—MANUFACTURING FOR STOCK DURING SLACK SEASON

Since the summer months usually were slack periods for orders, the Starrett Mill ordinarily attempted to have its production of grey goods¹ sold for three months ahead by June 1 of each year. In 1922, however, the mill had orders for only 12,000 cuts of cloth (60 yards to the cut), or four weeks' production, which were to be delivered at various times during the next three months. The management was forced to decide whether it should manufacture for stock, whether it should reduce operations, or whether it should shut down the mill at the end of the month until orders came in.

The company was informed by its brokers² that the market for its cloth was inactive and that there had been practically no inquiries for three or four weeks. An agent in New York who keeps in touch with the market conditions confirmed the broker's view. Cotton prices had advanced during the spring and there were strong possibilities that further advances would be recorded during the fall.³ The Starrett Mill, however, with many other

¹The Starrett Mill had a reputation for quality throughout the trade, especially in pongee cloths, which, were widely used for such purposes as shirting and coat linings. Although lawns, poplins, and other specialties were also manufactured, approximately 50% of the output in the first part of 1922 was of this specialty, a 34" 72x100, 7 yards to the pound, grey cloth. (These specifications refer to a 34" cloth, composed of threads 72 to the inch of warp which runs the length of the cloth, and 100 threads to the inch of filler which runs across the cloth. Various cloths differ in these specifications. For instance, a particular staple print cloth is specified as 28" 64x64, 7 yards per pound.) On account of its reputation the cloth of the Starrett Mill ordinarily commanded a premium of one-quarter to one-half cent over standard cloth of the same specifications. In May, 1922, when the market for pongees of the same specifications was 1534 cents, the Starrett Mill had taken its orders at 16 cents.

Many other mills were producing grey cloth of the same specifications, but brokers and converters were familiar with the fact that the Starrett cloth, when finished, would have a better luster and finish than the majority of other cloths. Each mill differed slightly in the quality of the cotton used, or in the way it processed its yarn, so that although cloths of different mills appeared to be identical in the grey, when they were made according to the same specifications, the finished material varied slightly. Converters and cutters-up frequently specified mills from which their brokers were to buy cloth for them, because they could not otherwise be sure of the condition in which it would return from the finishers. This was especially true when the converter sold his goods under a trade name, because a change in quality would destroy the confidence and good-will that had been built up in the past.

²The entire production was sold through brokers who collected ½ of 1% to 1% commission for their services.

³The total supply of cotton in all hands in the United States at the end of

mills had not been able to advance cloth prices accordingly, because of the weak conditions of the market.¹ Besides raw mate-

April was 5,490,000 bales, compared with 9,269,000 on the same date of the preceding year. Exports of cotton for August 1, 1921, to May 19, 1922, had been materially larger than the year before. Consumption of all cotton in the United States from August 1, 1921, to April 30, 1922, had been 4,449,823 bales, as compared with 3,579,889 bales the preceding year. Crop reports during the spring were unfavorable. Weather conditions were not only bad, but the reports of damage from boll-weevil also were increasing. The New York spot prices for April, May, and the early part of June were as follows:

PRICES OF MIDDLING UPLAND COTTON
(New York Cotton Exchange)

Date	New York Spots	Date	New York Spots	Date	New York Spots	Date	New York Spots
April 1	18.10	May 1	18.95	May 17	21.60	June 3	21.35
" 3	18.00	" 2	19.00	" 18	21.65	" 3	21.15
" 4	18.15	" 3	20.00	" 19	21.45	" 5	20.75
" 5	18.05	" 4	19.75	" 20	21.45	" 6	20.90
" 6	17.95	" 4	19.80	" 22	21.80	" 7	21.70
" 7	17.95	" 6	19.55	" 23	21.60	" 8	22.05
" 8	18.05	" 8	20.15	" 24	21.50	" 9	22.55
" 10	17.90	" 9	20.00	" 25	21.50	" 10	22.85
" 11	17.90	" 10	19.90	" 26	21.50	" 12	22.75
" 12	17.80	" 11	20.15	" 27	21.50	" 13	22.40
" 13	17.75	" 12	20.15	" 29	21.50	" 14	22.30
" 14	Holiday	" 13	20.15	" 30	Holiday	" 15	22.20
" 15	Holiday	" 15	21.25	" 31	21.20		
" 17	18.05	" 16	21.50	June 1	21.00		

(*Monthly Statistical Survey*, published by the Merchants' National Bank of Boston.)

The prices of pongees (34-inch, 7 yards per pound) eastern spot, according to the *Daily News Record*, were as follows:

1922	Price	1922	Price
April 1	.16	May 1	16-15½
" 3	.16	" 2	16-15½
" 4	.16	" 3	16-15½
" 5	.16	" 4	16-15½
" 6	.16	" 5	16-15¾
" 7	.16	" 6	16-15¾
" 8	.15½-16	" 8	16-15¾
" 10	.15½-16	" 9	16-15¾
" 11	.15½-16	" 10	16-15¾
" 12	.15½-16	" 11	16-15¾
" 13	.15½-16	" 12	16-15¾
" 14	.15½-16	" 13	16-15¾
" 15	.15½-16	" 15	.16
" 17	.15½-16	" 16	.16
" 18	.15½-16	" 17	.16
" 19	.15½	" 18	.16
" 20	.15½	" 19	.16
" 21	.15½-16	" 20	.16
" 22	.15½-16	" 22	.16
" 24	.15½	" 23	.16
" 25	.15½	" 24	.16
" 26	.15½-15½	" 25	.16
" 27	.15½-15½	" 26	.16
" 28	.16 -15½	" 27	.16
" 29	.16 -15½	" 29	.16
		" 30	.16
		" 31	.16

rials, overhead and wages also gave no hope for reduced costs, which would permit lower prices of cloth to stimulate the market demand.

In a similar situation late in 1921 the mill had closed down only after it had run 30 days without any orders.¹ Conditions at that time differed from those of 1922 in several ways. The demoralization of the cloth market had been more marked; cotton had fallen rapidly where now it was advancing; labor had been somewhat higher with prospects of reductions perhaps more favorable than at this time; and there had been large stocks of cloth in the hands of mills and retailers.

The mill superintendent did not wish to close down or to go on part time. Of the two courses he preferred the former. He believed that a reduction in working days, although it would keep the organization intact, would increase the unit costs on account of the undiminished overhead charges. An entire shutdown, after the orders on hand were completed, would reduce overhead charges, because all wages and salaries, except that of the mill treasurer, would stop automatically unless the foremen were retained on part pay during the idle period. There would be loss from idleness of machinery.²

If, on the other hand, the mill continued operating at full time,

¹On May 1, 1921, the Stosser Mills, of Fall River, Massachusetts, also faced a similar problem and decided to continue operations. The chief factor in the decision was the overhead charges which for the period, May, June, and July are shown in the table below:

Interest on \$1,000,000 at 6% per annum.....	\$ 15,000
Salaries of officers at \$20,000 a year.....	20,000
Insurance at 8% on \$6,000,000 with 90% rebate.....	1,200
(The 90% rebate is a contingent liability)	
Mill office salaries at \$35,000 a year.....	8,750
Local taxes at \$50,000 a year.....	12,500
Depreciation on 300,000 spindles at \$1 each per year.....	30,000
Electric power contract charge at \$80,000 a year.....	20,000
Wages of 200 corner men, overseers, etc. at 5¢ a day.....	38,000
Carrying charge 6% on 10,000 bales of cotton of 500 lbs. each at 10 cents a lb.....	7,500
Carrying charge of work in process 6% computed as 1 lb. of cotton per spindle per week at 10 cents a lb.....	3,900
Total overhead expense that continues during three months' shut-down.....	\$166,850

Since the management estimated that the loss from operation would not exceed the total overhead it believed that manufacturing stock was justified. Another important reason for continuing production was the disruption of the work which a shut-down would entail. Many good workers would be lost, for they would be the first to secure jobs elsewhere, while the poor and inefficient employees would be left to take up their old positions when the mill resumed production.

²In a textile mill, especially, idle machinery deteriorates rapidly in spite of good care. The leather rolls, for example, in the drawing frames, fly frames, and spinning frames get so hard that they must be replaced with new ones.

it would rapidly accumulate a stock of cloth which it would be impossible to dispose of for some time, unless there was an unexpected change in the cloth market for the better. Such a course, however, would reduce the cost per yard of the cloth to a minimum and, at the same time, would keep the organization intact. Since the mill was in a strong financial position, it would pursue such a course if thought advisable.

4. SHEFFIELD CHOCOLATE COMPANY—SPECULATION IN RAW MATERIALS BY MANUFACTURING COMPANY

The Sheffield Chocolate Company, which manufactured bar chocolate coatings for confectioners, was highly successful in sugar speculations in 1919 and 1920. Notwithstanding this fact, however, the directors were undecided whether or not the purchasing agent should be allowed to continue to buy and sell raw materials beyond the needs of the company.

The Sheffield Chocolate Company operated two factories 500 miles apart; 150 men were employed in each. The products were sold chiefly on six-month contracts. In 1919, the sales averaged \$150,000 per month. The sugar used each day in the preparation of chocolate aggregated about 25 barrels, of 350 pounds each, or slightly more than 2,500,000 pounds per year. It was not customary for the company to hedge its purchases of sugar. It bought in excess of requirements when a rising market was forecast and only enough to supply the factory when falling prices were expected. The officers relied upon this policy to return a small trading profit after inventory losses, which resulted from misjudged price trends, had been deducted.

In order to conserve the available supply of sugar, the United States Sugar Equalization Board, under authority of an act of Congress, purchased the entire 1918-1919 Cuban crop. Since the sugar was rationed by the board to refiners in accordance with their previous consumption and since the sale price of refined sugar was fixed at 10½ cents, it was necessary for the refiners to ration it similarly to manufacturers and wholesalers. For this reason, numerous users were not permitted to purchase as much sugar as they required. This fact, and the reports of a short sugar crop for 1919-20, indicated to the purchasing agent that, with the abolition of Government control, the prices of

the available supplies would increase markedly. The Sheffield Chocolate Company consequently decided to speculate in sugar and entered into contracts for delivery of both raw and refined products during the first half of 1920. The prices at which these were made were slightly higher than the price which had been fixed by the Sugar Equalization Board for 1919 delivery. From October to December, the purchasing agent contracted for three lots of raw sugar aggregating 15,000 bags of 320 pounds each; one for delivery in the second half of January and two for delivery in May. The price specified ranged from \$28 to \$34 per bag. In order to establish the company as a customer with the sugar refiners, the purchasing agent contracted for the delivery of a total of 25 barrels per day from three or four sources for four months. In addition, a contract was made with a wholesaler for a like amount per day for six months from March 1920.

The wholesalers and refiners with whom contracts were made were aware that the company could use only a fraction of the supplies which it had purchased; but, since they were of the opinion that market prices were near the peak, they were willing to make sales on the credit of the company in order to dispose of their supplies. Thus, it was not necessary for the Sheffield Chocolate Company to provide a margin, and since the sugar in almost every instance was sold for immediate delivery before it was received in New York or shipped from the refineries, no carrying costs were incurred.

As forecast by the purchasing agent, the price of sugar rose abruptly on January 21, 1920, from the Government price of 10½ cents to 15 cents and continued upward until May, when 22½ cents was the average wholesale quotation for the month. The wholesaler with whom the contract for 25 barrels per day had been made delivered sugar under it for four weeks; at the end of that time, he requested the Sheffield Chocolate Company to cancel the agreement. A settlement was effected under which the former paid the company \$65,000. As the price of sugar continued to rise,¹ the raw sugar held by the Sheffield Chocolate Company was resold gradually. A profit of \$98,000 was netted on 10,000 bags. The Sheffield Chocolate Company had 5,000

¹ PRICES OF REFINED SUGAR IN CENTS PER POUND IN 1920:

January	15.4	April	12.9	July	19.1	October	10.8
February	14.9	May	22.5	August	16.7	November	9.6
March	13.7	June	21.2	September	14.5	December	8.1

bags of its raw sugar refined and sold the product for 17½ cents, whereas 13 cents was the total cost. The profit on this transaction amounted to \$72,000. The sugar in excess of requirements contracted from refineries was sold in like manner throughout the spring and summer of 1920 at an average price of 17½ cents. The Sheffield Chocolate Company received from its sugar transactions a net profit of between \$300,000 and \$400,000.

Since over 75% of the contracts for chocolate and chocolate coatings for delivery during 1920 had been made early in the year, the Sheffield Chocolate Company was not embarrassed by cancelations as it might have been if the contracts had been made later at higher prices. Manufacturing activity was sustained until the fall of 1920, when the failure to secure materials necessitated a slackening in production. When orders from confectioners ceased to be received, the company was not able to meet its obligations except with the funds secured from profits on sugar transactions earlier in the year.

Two of the directors maintained that speculation in raw materials was hazardous and should not be continued. They were apprehensive lest in the future the losses more than offset gains. They favored the adoption of a policy under which sugar should be purchased for immediate needs only. In spite of the position of these directors, however, it was decided to continue the purchase of sugar in excess of requirements in accordance with market conditions as forecast by the officers of the company and to look upon the profits realized in this manner as a legitimate business gain and as a source of funds to offset any trading losses which might be incurred.

5. ALLAGASH SHOE MANUFACTURING COMPANY—PURCHASE OF RAW MATERIALS INSUFFICIENT TO PRODUCE QUANTITY OF SHOES ORDERED BY CUSTOMERS

In the spring of 1920, the Allagash Shoe Manufacturing Company received the largest quantity of orders in its history. These orders were obtained during the first few months of the year and were for the fall trade. Manufacturing of spring orders normally commenced in April and May, and deliveries were made in July, August, and September. In February of that year, the purchasing agent consulted with the president regarding the

quantities of leather and materials to be purchased to cover the spring orders. He recommended that the company purchase its full requirements of raw stock at once, inasmuch as leather and other materials were rising constantly in price, and were becoming increasingly difficult to obtain. The president, however, always had been opposed to the purchase of raw materials at high prices, and, at this time, when prices had risen to abnormal levels, he objected to the proposal of the purchasing agent.

The shoe industry had been enjoying great prosperity for several seasons prior to 1920. The scale of manufacturing represented the utmost capacity of all the factories in the United States. The products manufactured were purchased immediately by the retailers, and although the retail distribution had been excellent, it had been insufficient to justify the abnormal volume of production. There had been, therefore, an excess accumulation of merchandise in the retail shoe stores for several seasons. Since prices had been rising steadily for several seasons, the retailers had not felt the normal pressure to "clean-up" every six months.

In view of the situation in the shoe and leather trades, the president considered it unwise to purchase more than a fraction of the company's requirements of raw material during the spring of 1920. He was of the opinion that the industry was inflated excessively, and that a decline was probable. His experience had been that it was injudicious to purchase any large quantity of materials at abnormally high prices.

Other executives in the company opposed the views of the president. They pointed out that supplies of leather appeared small, that congested railroad conditions made it imperative to have raw material shipped several weeks before it was needed, and that the prices of leather were rising rapidly. They predicted not only that the company would have to cover at higher prices, but that probably it would not be able to secure raw materials at all, and consequently its relative position in the industry would be destroyed.

The president, however, became convinced by his study of conditions that customers were placing orders on the supposition that the inflation would continue throughout the year. Therefore, it seemed to him unwise to cover all orders with raw material purchases. He preferred to risk the disadvantages under

which the company would operate, if the break in prices were delayed, rather than to have the company stocked heavily with raw material when the break came. He foresaw that if he could reduce the inventory so that the company's losses from the deflation of prices would be slight, he would be able after the decline to purchase raw materials at much lower prices and would be able to send his sales organization into the field with shoes produced at low cost, in competition with other manufacturers, who would be trying to liquidate high-priced inventories. For these reasons, he instructed the purchasing agent to restrict his purchases to 25% of the quantity of raw material required to fill the total number of orders. This policy was adhered to during the spring of 1920, in spite of the protests of the other executives and particularly of the sales organization.

6. DAMERON SHOE COMPANY—EXPEDITIOUS INVENTORY LIQUIDATION AND DISCONTINUANCE OF SPECULATION IN INVENTORIES

In May, 1920, the management of the Dameron Shoe Company considered the advisability of liquidating its excessive inventory. The Dameron Shoe Company operated a retail store in one of the best locations in the loop district of Chicago. Merchandise of the best quality was sold, and style was emphasized as a selling appeal. The prices of the shoes sold ranged from \$8 to \$20 per pair. The Dameron Shoe Company attracted the most exclusive class of customers and had established a reputation for fine shoes, all of which were sold under the store's own name.

In the latter months of 1919, and in the early part of 1920, the sales of the store were unusually high. Prices were advancing, and the management of the Dameron Shoe Company interpreted these signs as an indication that the period of prosperity was to continue. There were no well-defined buying seasons for this store. Stores that sold merchandise in which the style element was less pronounced usually placed most of their orders for spring delivery in the fall, and orders for fall delivery in the spring. Until the latter part of 1919, it had been the policy of the Dameron Shoe Company to place orders more frequently throughout the year in order to have the stock embody the changing style tendencies. There had been occasional purchases

in excess of requirements when it appeared evident that a speculative profit could be realized through the appreciation of inventory on a rising market. The policy of purchasing more shoes than the sales volume warranted, in the expectation of securing speculative profits on a rising market, was followed during the latter part of 1919 and in the early months of 1920. Consequently, it was impossible to give the customary consideration to the style element. This was not held to be a serious objection, however, since customers were less exacting in style demands in this period of prosperity and high earnings. A class of customers, who in normal times purchased from medium-priced stores, then could afford to patronize the Dameron Shoe Store. This additional patronage enabled the company to make high monthly sales in spite of its temporary departure from former merchandising methods.

As a result of this purchasing policy, in April, 1920, the store had accumulated the largest inventory, expressed in dollars, since its establishment. In May, the inventory was smaller by only \$10,000, for it was not until this month that the management realized that a period of general depression was imminent and that buying could not continue at the prevailing high prices. Manufacturers and retailers were reducing the prices of shoes. It was at this time that Wanamaker's store in Philadelphia made a flat price reduction on all merchandise. There was general discussion of a "buyers' strike" that had been impending and was already in progress.

The management deliberated on the advisability of a flat mark-down of 20% on all merchandise in the store. Against this procedure was the argument that the prestige of the store might be lowered to that of stores which placed emphasis on the price appeal. In addition, there was the possibility that the price recession and declining sales were only temporary and that by waiting a few months, the company could dispose of its inventory with less sacrifice. A price reduction of 20% on the excessive inventory at that time involved a substantial loss. On the other hand, it appeared that since the consumers no longer were willing to pay the prices that had previously prevailed, they were more inclined to accept the reduction as good merchandising and not as an indication of lowered quality or service. Rather, if higher

prices were to be continued by the store, such action was likely to be classed as profiteering. It was also patent that unless a mark-down was taken, the stock-turn for the year was likely to be reduced appreciably, even though the curtailment of consumer purchases lasted only a few months. By taking its loss early, the store could purchase at, and sell on the basis of, replacement costs and secure a higher rate of turnover. Since practically all retailers had large inventories to dispose of, a surplus of shoes might be expected for many months to come, and the store which disposed of its inventory earliest, therefore, was in the most advantageous position.

The Dameron Shoe Company decided to make an immediate mark-down of 20% on all merchandise in the store on June 1, 1920. Table 18, below, shows the effect that this mark-down produced on net sales in the two succeeding months.

TABLE 18—EFFECT OF MARK-DOWN ON NET SALES

Month	1920	1921
January	\$ 58,426	\$ 53,543
February	49,006	35,977
March	51,280	49,519
April	51,782	47,233
May	56,381	51,649
June	62,843	56,564
July	36,044	32,985
August	35,045	35,815
September	45,768	45,227
October	48,888	56,865
November	54,055	55,844
December	55,319	56,202
	\$604,837	\$577,423

The sales of June, 1920, the month in which the 20% reduction was taken, amounted to \$62,843, and were greater than during any other month of 1920 or 1921. Because of the price reduction, the number of pairs sold was greater than the sales in dollars indicated. By taking the losses quickly, it was learned that the net loss was ultimately less than it otherwise would have been. Because of seasonal tendencies, sales during July and August were comparatively small.

After June 1, 1920, the store purchased only enough merchandise to maintain sufficiently complete stocks of sizes and styles

to meet the requirements of its customers. Table 19, below, shows the effect of the price reductions and restricted buying policy on the monthly inventories during the latter part of 1920 and during 1921. The figures are at the retail selling price.

TABLE 19—EFFECT OF PRICE REDUCTIONS AND RESTRICTED BUYING POLICY ON MONTHLY INVENTORIES, 1920-1921

Month	1920	1921
January	\$215,697	\$164,747
February	237,344	142,739
March	231,837	114,325
April	255,035	117,457
May	245,219	118,512
June	242,724	118,962
July	216,770	121,842
August	201,861	133,578
September	188,552	133,603
October	184,482	157,470
November	181,489	163,951
December	173,415	173,628

The inventory, expressed in dollars, was reduced from the high point of \$255,035 in April, 1920, to a low point of \$114,325 in March, 1921. After the inventory had been reduced, a question arose as to the advisability of larger purchases and the accumulation of another inventory at low prices in order to make a speculative profit when prices should rise.

On the advancing market in the latter part of 1919 and the early months of 1920, the appreciation of inventory had increased the profits of the company. The profit and loss statement, however, showed that all which had been gained previously through rising prices had been wiped out in the abrupt price recessions which came later. In addition, there was a marked increase in the number of styles after June, 1920. This was caused by the efforts of manufacturers to stimulate sales by the introduction of novel styles. The Dameron Shoe Company decided that if it did purchase heavily, there might be a risk not only in respect to price, but also in respect to style. It was held further that the true purpose of a retail store should be that of merchandising, and that the efforts of its management should be devoted to this end alone. Conditions had forced many of the temporary customers of the prosperous period of 1920 to go back to stores

with medium-priced shoes. The class of the clientele which remained demanded new and varied styles, and to meet this demand, the store had to make its purchases frequently.

The Dameron Shoe Company decided that after the experiences of May and June, 1920, it should refrain from making greater purchases than necessary to fill the demands of its customers.

7. INVINCIBLE CLAY PRODUCTS COMPANY—MANUFACTURING FOR STOCK DURING A PERIOD OF DEPRESSION

The Invincible Clay Products Company, engaged in the manufacture of fire brick, was a relatively small organization and its unit production costs were higher than those of most of its larger competitors. This condition was in part attributable to the overhead costs, and in part to the inability of a small-scale operation to secure the economies available in a plant producing in quantities.

To overcome this higher manufacturing cost, the management planned its production schedule to produce in the most favorable phase of the business cycle, and to ship from inventories, with bonus payments for prompt shipments when competitors could ship only on order. This made necessary the determination of a policy on the accumulation of inventory in anticipation of increased demand, which was usual only with increased activity in the iron and steel industries, where the most important market existed for the products of the refractories industry. The iron and steel companies depended upon the fire brick manufacturers to maintain stocks of furnace linings during a period of increasing and active production. The cost of furnace linings was negligible in relation to the total cost of production of steel. Even at a high price for fire brick, the cost of furnace linings per ton of steel was not over 25 cents. Thus the price of fire brick is so small an element in total cost of production, that assurance of an adequate supply rather than the price of furnace linings is the consideration of most importance to the company operating the steel plant. Periods of activity and depression, therefore, in the fire brick trade correspond closely with the periods in the manufacture of pig iron.

In October, 1920, the plant of the Invincible Clay Products

Company was restricted in operation to a reduced force of highly skilled workmen, retained to fill emergency orders for important customers. The other employees obtained work with neighboring plants, whose managers thought it wise to manufacture for stock. At this time unfilled orders were declining rapidly in number as current orders were being finished, and additional orders were proving scarce. The inventory was not over 50% of one month's normal output; monthly output was at approximately 75% to 80% capacity, which was normally the most economical rate. This inventory included the miscellaneous lots which were called for in small quantities, but on which a regular quantity was more economical to produce than a production limited to the exact number required by the order received. There were also included several standard shapes. The orders on special shapes normally were about 30% of the total number booked by the Invincible Clay Products Company. Contracts for fire brick are not generally firm contracts except for special shapes.

In the last quarter of 1920 the company quoted prices 10% to 20% below those which generally were quoted by competitors at that time. The latter, in general, quoting their prices on the basis of cost of production, kept up production to keep down the unit cost, and so built up inventories at high wage costs, while the Invincible Clay Products Company was operating to produce only the quantities necessary to fill orders. These orders had been secured on a cut price basis, because the management considered that it was wise to begin cutting prices in the fall of 1920, in view of conditions of production and sale in the refractories industry as reflected in published figures of production, shipments, orders, and stocks. The figures showed that unfilled orders and new orders had been decreasing since May, whereas production was being maintained. Conditions in the pig-iron industry showed more rapid declines from the high levels of the first quarter of the year and the consideration of conditions in both industries led to the determination to sell fire brick for future delivery, and to maintain factory production only to fill orders.

During the spring of 1921 the manufacture of pig iron continued to decrease rapidly, and though sales of merchant furnaces were more profitable after January, pig iron prices continued to decline. In July, 1921, the precipitate curtailment in pig iron output came to an end. By the end of August an expansion of

pig iron production appeared, orders for brick were more frequent, and reports of furnaces going into blast were appearing in the press. But prices for both pig iron and brick continued to decrease because of the liquidation of stocks. The *Iron Age* composite price on July 26 was \$19.48 per long ton as compared with the high price of \$47.83 registered in September, 1920. Prices of fire brick had decreased from a high price of \$50 in September, 1920, to \$34 per thousand in July, 1921. Larger producers, located near the company's plant, had closed down and were endeavoring to liquidate large stocks, as a result of continuing to produce at high levels during the preceding winter and spring. During the remaining months of 1921 prices declined further, and the general market figure was reduced to \$30 per thousand in January, 1922. The company, in anticipation of prospective cuts in wages and increased efficiency of labor, continued to sell for future delivery at prices below those quoted by competitors; as a result the company showed a small profit in 1921, although the last quarter showed a loss.

In 1922 the president wished to run the plant full time as soon as possible, in order to take advantage of the supply of experienced men who were idle because of the inactivity in the refractories industry and the iron and steel mills situated in the same locality. The wages of the force which had been retained had been cut 30% during 1921, without any reduction in the number of applications for work. Almost none of the output in 1921 went into stock, but because of the stocks of brick known to be in the storehouses of competitors, the president hesitated to operate on full time until a change in the trend of pig iron prices should appear. Pig iron production had been expanding steadily during the second half of 1921.

In January, 1922, a labor force still could be recruited readily. By operating the plant full time and storing the unsold product in the expectation of higher prices, the president believed he could avoid the higher labor costs and the decreased efficiency of workmen which had appeared in the height of the business activity. It was decided, therefore, to manufacture on full time beginning February 1, 1922, and the recruiting of a labor force was begun in January. No plans were made for a vigorous sales campaign, however, since the purpose of the reopening was to increase inventories at low costs rather than to sell the whole of

current output at current prices, which were still low, as a result of the attempt of many manufacturers to liquidate their inventories rapidly.

The plant was operated at 65% of its capacity, and excess quantities produced at low costs during the spring of 1922 were stored. On June 1, wages were raised 15%, but current demand for furnace linings was greater and prices had risen and were remaining steady. Output was increased to a rate 80% of capacity. The stocks gradually filled all the available storage space and on October 1, 1922, were equal to approximately two months' production at the rate of output of the early months of the year. The company, therefore, again laid off men, and manufactured only to fill orders, but did not attempt to liquidate the stocks until other signs indicated the advisability of this action.

In March, 1923, a sharp increase appeared in the volume of new business booked. Encouraged by this, large producers put their prices up to \$45 per thousand fire brick for later months' deliveries. Although pig iron production reached record levels during 1923, the Invincible Clay Products Company was not able to collect much in bonus payments for prompt deliveries because car service was satisfactory everywhere. The president decided that liquidation was advisable, and again cut the market, selling out the accumulated stocks at \$42. He observed the statistics and saw the excess of free stocks accumulating, and he believed this excess again would flood the market, or at least cause lower prices. He determined to sell for future production during 1923 by underselling other manufacturers and maintaining a higher percentage of sales at their expense as long as reports showed the stocks of furnace linings were continuing to accumulate in manufacturers' hands. By September 1, 1923, prices in the general market had begun to decrease, and reached \$40 per thousand on January 1, 1924; but the Invincible Clay Products Company had no excess stock and its surplus cash was invested in short-term securities, pending the development of conditions which would justify the accumulation of stocks. The president continued to undersell the market for future delivery, while his competitors were manufacturing stock. Until more favorable signs appeared, he preferred interest-bearing short-term securities as an investment for the company's liquid capital rather than a stock of high cost fire brick with slight probability of sale, but

strong probability of loss in value. He believed that there always had been ample time to accumulate stocks on every well-defined rise. The market did not indicate a marked rise for the immediate future, and consequently he preferred his policy to that followed by his competitors, who were operating at a higher rate, and were obliged to stock their products.

8. BARNABY AND COMPANY—PURCHASE OF COPPER WIRE ON CONTRACT AND IN SPOT MARKET IN SPRING AND SUMMER
OF 1923

Barnaby and Company manufactured 70 sizes and varieties of insulated copper wire and cable used for electrical purposes. Prices on the company's products were based upon the current price of copper. The difference, therefore, between the price which the company paid for copper and the price which was current when this particular copper was sold in manufactured form represented a gain on a rising market and a loss on a declining one. The purchasing policy was formulated by the president. In order to avoid losses on price decreases, it was necessary to study market conditions with care and to forecast fluctuations with accuracy. During the first six months of 1923, therefore, when the company experienced both a rising and falling market in copper, the president had to decide in each case whether it would be advisable to attempt to cover the company's requirements of wire by small purchases against specific orders, or whether he should place contracts for the quantities which he estimated would be used before the next anticipated change in prices.

The weekly consumption of bare copper wire, which was purchased from eight wire mills, varied from 100,000 to 125,000 pounds. Unspecified wire, the price of which fluctuated with the copper market, was purchased in quantity from these mills on contracts which were not placed at regular intervals; the time and the quantity depended upon the current price of copper and upon the condition of the market. The president contracted heavily for copper on rising markets, when the price was low; the quantity varied according to the president's conclusions as to the probable turn in the market and as to how much the factory would consume before that time. Whenever the stock on

hand became low, the management decided upon the kind and sizes of the wire to be ordered, and requisitioned the required quantity of specified wire against the outstanding contracts of unspecified wire. In this way the contracts were taken up as the wire was needed. Deliveries from the wire mills required from 3 to 15 weeks, and depended upon changes in market conditions. The company, therefore, had to gage carefully the probable fluctuations in business activity, in order to requisition an adequate supply. Further difficulties in ordering resulted from the wide fluctuations in the sizes and varieties of finished wire required by customers; the majority of the product was manufactured on the basis of special orders.

Early in 1923, the copper market commenced to move sharply upward. The president, accordingly, had to determine whether to purchase wire in small quantities, or to contract for a large quantity from the mills. If he followed the latter policy, he also had to determine how long the market probably would continue to rise, and the quantity of wire for which contracts should be placed. After a careful study of the situation, the president estimated that the market would turn in the middle of June. He decided, therefore, to contract with the wire mills at current prices for sufficient copper to last until that time. During the spring months, business activity increased to such an extent that the company's mill had sufficient unfilled orders to keep it running at capacity for four or five months. The wire mills with which the company had contracts were in a similar situation, with the result that they were unable to grant deliveries in less than 15 weeks from the date of the order.

Despite the great activity of manufacturers, the copper market broke during May, 1923, at which time the company had contracts outstanding for half a million pounds of copper wire. A peculiar situation arose; wire manufacturers were offering their products at a lower price, in accordance with the decreased price of copper, when they had so many orders on their books that they were unable to promise delivery in any reasonable length of time.

The president offered the following theory for the early break in the market. There were four channels for the disposition of the copper output: in the exportation of refined copper to foreign countries; and in the domestic manufacture of wire, sheet copper,

and brass. The copper market, because of the large portion of the production which was exported, was affected to a large extent by conditions in foreign countries. The domestic mills, which manufactured wire, sheet copper, and brass, were consuming copper at as great a rate as their capacity permitted. The increasing complications in the foreign situation with no prospect of improvement, precluded any possibility that the foreign market might absorb more of the supply. It became apparent, therefore, that in spite of the great activity and prosperity of the domestic manufacturing industries, the existing demand for copper from all sources could not be increased further, and for this reason the price of copper dropped.

For several weeks after the break in the copper market the company did not follow its policy of quoting prices according to current prices of copper, but based its quotations on the price previous to the decline. The company followed this course as a means of holding off customers. On account of the large quantity of its unfilled orders it was not anxious to increase its sales, but it accepted all orders that were received. About two weeks later, the number of unfinished orders had been reduced sufficiently to warrant the decrease of the company's price to a point consistent with the copper market.

When the price of copper declined, several new questions arose regarding the disposition to be made of the outstanding contracts of copper, and, also, the purchasing policy to be followed. It was necessary to decide whether to requisition the wire on contracts immediately, or to draw on the stocks on hand and to allow the contracts to remain intact. Second, a decision was necessary as to whether the company should depend upon securing wire on direct orders, or whether it should contract for a quantity of wire in order to be assured of an adequate supply. In the case of the outstanding contracts, on account of the uncertainty of the market and the length of time required for delivery, there was danger of ordering sizes and kinds of wire for which the demand might diminish. With regard to the purchasing policy, it was difficult to secure wire on a direct order without the medium of a contract. Wire manufacturers threatened that they would not accept small orders of this kind. The company, moreover, had a large number of unfilled orders during the summer of 1923. In August, 1923, although new orders were being received at a

TABLE 20—PRODUCTION AND EXPORTATION OF REFINED COPPER
 (Export figures are for copper in form of ingots, pigs, and bars only)

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Survey of Current Business, May, 1933, p. 67.
Monetary Survey of the United States, Calendar Year, 1931, p. 374.
Foreign Commerce and Navigation of the United States, Statement No. 401 (January to May, 1933, inclusive) of Department of Commerce, Bureau of Foreign and Domestic Commerce.

slightly decreased rate, there were still so many on hand that deliveries on new orders could not be promised until October or November.

When the price of copper commenced to drop, the president decided that no requisitions should be drawn against any of the outstanding contracts until the market became more stable, and he instructed the management of the mill to draw on its stock on hand. He determined, moreover, that it would be unwise to contract for more wire while the price was decreasing. Rather than place contracts on a falling market, he preferred to take the risk of inadequate supplies, even though the company had enough orders to operate at capacity for several months. He was convinced that, despite the reported shortage, enough wire would be available to fill the company's requirements. This conclusion and the policy which he followed were based upon his observation, long experience, and all information which he could secure.

9. JEDBURGH TEXTILE COMPANY—PURCHASE POLICY FOR COTTON IN THE FALL OF 1923

The Jedburgh Textile Company operated a knitting mill which manufactured children's cotton winter weight underwear and a small quantity for summer use. The total net sales of the company averaged about \$500,000.

Competition was so keen that profits depended upon successful speculative purchases of cotton. A company which purchased cotton at a low price on a rising market before the date on which it was necessary to put it in process, could quote lower prices on the products than other companies which bought cotton just before the process of manufacture was begun.

It was the custom in the knit underwear trade for manufacturers and "commission houses" to send out salesmen from September to December inclusive, to secure orders for delivery the following summer. Production for these orders was begun customarily in January and continued until the summer months, dependent upon the size and number of orders that had been received. During the remainder of the year underwear was produced for "fill-in" orders received from wholesalers and retailers.

In September, 1923, the company had no yarn in stock. The general manager of the Jedburgh Textile Company was uncertain whether to buy the cotton yarn for production to begin January, 1924, or whether to wait in the expectation that the price of yarn might be lower in the following months. The problem was twofold: first, to predict the number and amount of orders for underwear for delivery in 1924, and second, to predict cotton prices. Only a rough estimate was possible since salesmen were just beginning to solicit orders. The largest number of orders was received ordinarily in November and December. In 1922, the company's orders were not enough to keep the mill in operation after August, 1923. Inasmuch as the orders in 1922 had been small, the general manager expected larger orders in 1923. On the other hand, it had been the experience of the company that the knit underwear trade was one of the first to feel depression or recovery. The general manager was apprehensive lest the country enter a period of moderate depression in the beginning of 1924 which might be reflected in the knit underwear trade by the receipt of few orders in the fall of 1923. Significant statistics of conditions in the knit underwear trade were collected by a national association of knit underwear manufacturers, which were published by the *Survey of Current Business*.

No figures were available in September, 1923, for months later than June of that year.¹ The general manager stated that the price of cotton yarn used by the Jedburgh Textile Company varied directly with the price of raw cotton. Although the prob-

¹STATISTICS ON KNIT UNDERWEAR FROM THE "SURVEY OF CURRENT BUSINESS"
(By 1,000 dozens)

Date	Production	Orders Received	Shipments	Cancellations	Unfilled Orders at End of Month
1920 Mo. Av.	591	101	459	50	502
1921 Mo. Av.	597	596	462	10	1,702
1921					
May	499	472	437	9	813
June	589	554	523	8	878
July	510	459	470	12	493
August	599	712	614	7	801
September	620	1,369	663	9	1,736
October	676	840	701	8	1,791
November	674	540	481	25	1,897
December	603	448	528	20	1,928
1922					
January	616	1,028	708	10	2,011
February	648	558	619	15	1,040
March	669	463	649	12	1,535
April	648	411	535	22	1,600
May	668	814	500	19	1,316
June	650	701	598	17	1,458
July	540	785	710	10	1,270

lem of forecasting the price of cotton yarn was, therefore, the same as that of forecasting the price of raw cotton, the problem of buying yarn, however, was not the same as that of buying cotton, because immediate deliveries of yarn could not always be secured. When yarn manufacturers were busy, they frequently could not make delivery until three or four months after the order was received. Several manufacturers of yarn could make immediate deliveries then, but could not promise deliveries on orders received a month or two later.

In September, 1923, the price of cotton was higher than it had been since March, 1923. During the early summer a large cotton crop had been expected, but, as the season progressed, growing conditions became less favorable and a smaller crop was indicated. Prices, therefore, rose again to the high level reached in the early spring. The possibility of a short crop favored immediate purchase of yarn. If a general depression were to ensue, lower prices might result from the decreased demand. Furthermore, although domestic consumption of cotton in 1923 had been larger than ever before, it had not been large enough to counterbalance the decrease in exports of cotton in comparison with pre-war conditions.¹

The general manager secured the following facts from a cotton forecasting service to which he was a subscriber, which led him to

(Footnote continued from opposite page)

Date	Production	Orders Received	Shipments	Cancellations	Unfilled Orders at
					End of Month
August	619	636	823	19	1,578
September	580	546	780	12	1,687
October	681	1,123	603	9	2,333
November	667	1,015	629	14	2,287
December	549	1,144	546	8	2,524
<hr/>					
1923					
January	635	1,167	850	25	2,950
February	620	501	537	10	2,588
March	688	559	566	11	2,188
April	674	367	654	12	2,162
May	759	443	644	15	1,637
June	734	379	667	16	1,748

¹ STATISTICS ON COTTON FROM THE "SURVEY OF CURRENT BUSINESS"
(By 1,000 bales)

Date	Total Domestic Stocks Ginned at End of Month	Domestic Consumption	Exports	Crop Estimates	Price per Pound of Middling Upland Crop
1913 Mo. Av.	482	727	727	14,156	.128
1914 " "	4,125	409	763	10,135	.121
1915 " "	7,055	466	696	11,192	.102
1916 " "	6,650	533	585	11,500	.145
1917 " "	5,800	566	401	11,302	.135
1918 " "	5,735	547	342	13,060	.318
1919 " "	7,301	480	546	11,421	.325

(Continued on page 304)

believe that the lower prices of cotton might be expected. The cotton crop in 1923 would approximate 11,000,000 bales. This was 13% greater than the 1922 crop and slightly above the average of the previous five years. The "carry over" from the 1922 crop was 2,087,000 bales. Thus 13,087,000 bales were available for domestic and European consumption. This was a larger quantity than was available in 1922. Domestic consumption in 1922 was 6,664,700 bales, and exports amounted to 4,864,000 bales. Prior to 1914, exports averaged about 8,500,000 bales. Thus the record-breaking domestic consumption in 1923 was more than counterbalanced by low exports. The Department of Commerce, in September, 1923, placed the world's supply at 27,568,000 bales. World consumption in 1922 was estimated at 20,950,000 bales.

Since the number and size of orders to be received during the

(Continued from page 303)

Date	Total Domestic Stocks Ginned at End of Month	Domestic Consumption	Exports	Crop Estimates	Price per Pound of Middling Upland Crop
1920 Mo. Av.	6,375	534	513	13,440	.339
1921 " "				7,039	
1922 " "				9,904	
1923					
January	10,402	366	605	.167	
February	10,817	395	493	.130	
March	10,047	438	375	.118	
April	9,351	409	320	.121	
May	8,457	441	477	.139	
June	7,536	402	495	.210	
July	6,534	410	599	.143	.124
August	6,147	467	423	.103	.139
September	7,594	485	533	.037	.204
October	9,995	494	875	0.537	.107
November	9,886	528	649	0.537	.182
December	9,048	511	640	7.954	.183
1922					
January	8,138	527	476	.179	
February	7,465	472	338	.181	
March	6,557	520	461	.183	
April	5,546	444	598	.181	
May	4,612	495	409	.208	
June	3,641	309	491	.221	
July	1,832	458	373	11.065	.223
August	1,903	526	273	11.400	.210
September	5,157	494	369	10.575	.215
October	8,172	534	799	10.135	.218
November	8,015	579	858	10.135	.256
December	7,271	529	608	9.762	.257
1923					
January	6,305	610	473	.275	
February	5,050	567	360	.290	
March	4,825	618	318	.307	
April	4,071	377	263	.190	
May	3,363	621	160	.377	
June	2,068	542	214	.384	
July	3,088	461	171	11.612	.359
August	3,025 (approx.)	492		11.516	.355

Yearly figures from 1913-1922 represent the final estimate of the year's crops. Monthly figures in 1921, 1922, 1923 represent the Government estimate for that month.

fall were uncertain, and since there were indications of a decline in the price of cotton yarn, the general manager decided not to purchase the yarn needed for production in 1924.

10. ROGERS COMPANY—RESTRICTION OF ORDERS FOR STAPLE PRODUCTS IN 1923 AND ADVANCE PLACEMENT OF ORDERS FOR SEASONAL MERCHANDISE

The Rogers Company, an important wholesaler of dry-goods of all kinds, specialized in hosiery and underwear. Sales in these two lines comprised ordinarily from three-fourths to four-fifths of the total sales. All goods were sold under the company's brand. The underwear was principally in standard styles, but the type and weight of the garments depended, of course, upon the season. Sixty per cent of the sales of hosiery was in standard styles which were manufactured and sold continuously throughout the year. Approximately 25% of the hosiery sales was in semi-staple styles; that is, although sales were made throughout the entire year, a larger volume of sales was secured in certain seasons than in others. The demand for the remaining 15% of the hosiery was seasonal. Prior to 1923, the company had ordered its seasonal goods from six to nine months in advance in order to enable the manufacturers to level their production peaks. Such articles were held in storage by the manufacturers until the company needed them. Exceptions to this policy had been made in years when the company expected a drastic reduction in prices such as occurred in 1920. In the summer of 1923, when prices had declined to some extent from those of the first of the year, it was necessary to decide whether to curtail purchases of staple articles until the market became more stabilized and also whether it was wise on a falling market to place orders for the next season's goods.

The company purchased the entire output of 8 or 10 manufacturers and the partial output of about 50 others. Of the purchases from these 50, 75% were from 8 or 10 medium-size companies. The manufacturers were all specialists in the products which they made. For example, one produced silk socks exclusively; another manufactured women's silk hosiery; and a third, children's stockings. Others specialized on various kinds of wool hosiery and underwear. The company believed that by

purchasing from manufacturers who specialized on one article, it secured the best service, the lowest prices, and the most uniform quality. Production was more economical in a factory which manufactured one standard article and sold it to one company or to only a few distributors. The overhead of such a company was reduced to a minimum, and the management had an opportunity to progress steadily in the improvement of processes and machinery and in the perfection of its product. The chief advantage of ordering seasonal merchandise in advance was that, in return for the removal by the wholesaler of the problems connected with seasonal production, the manufacturer could give better service to the wholesaler and was willing to cooperate to a larger extent. Continuous production throughout the year eliminated organization difficulties; there was no disruption such as occurred in factories where many employees were laid off annually during the slack period. Although there was no way of measuring the savings which resulted from continuous production, they were estimated to be greater than the carrying charges on finished products. A manufacturer who offered steady employment, furthermore, attracted workers of greater skill and ability than could be secured by a factory engaged in seasonal production. The result was that the merchandise produced under such conditions was of a finer and more uniform quality.

The chief disadvantage was that when prices declined after the orders had been placed, the company sustained a loss. If, for example, the company had had large advance orders outstanding in 1920 and had not foreseen the break in prices which occurred in the summer of that year, the effect on its finances would have been disastrous. During the period preceding the break, the officers realized that prices were excessively high and decided that it was to the advantage of the manufacturers and the company to place no more orders. When the producers received no orders, they did not purchase raw materials at the prevailing high prices; consequently, with the prospect of a break in prices close at hand, the Rogers Company considered that, by keeping out of the market, it could avoid for itself and the manufacturers losses from high-priced inventories and commitments.

Prices in 1923, however, were not inflated to such an extent as in 1920. Although they might continue to decline, the company did not expect the reduction to be serious or more than a minor

fluctuation. It was easier to reduce the scale of manufacture of staple goods than of seasonal goods, for in the former case, production was continuous throughout the entire year and could be based upon the quantity of goods ordered and the frequency of orders. For seasonal merchandise, however, control of production by the wholesaler was more difficult, for the manufacturer needed to have his orders in advance, so that he could operate steadily and eliminate peaks during the season.

The Rogers Company believed that its function was to serve as a distributor for manufacturers and not to speculate on market fluctuations. In its judgment, with the exception of fundamental price movements and great price adjustments such as occurred in 1920, there was no necessity for the prices of its goods to change. The articles, both staple and seasonal, which it distributed were standard and carried a well-known trade-mark. There was no reason to cause the prices of standard articles of this kind to follow the continual fluctuations that occurred in the prices of raw materials. The company was of the opinion that established prices on staple goods were to the advantage of the manufacturer, distributor, and consumer; for otherwise, manufacturing was irregular; the distributor could not offer the best service because of the uncertainties of the market; and the consumer not only was confused and dissatisfied by the price changes but also received inferior quality and service. The company, therefore, did not expect to change its selling prices on staple goods during 1923. The seasonal demand, however, was different, for whereas the prices in one season remained more or less constant, they were likely to change from one season to the next.

The Rogers Company decided to restrict its orders of staple goods which consisted chiefly of silk hosiery, inasmuch as the price of raw silk was proportionately higher than that of other raw materials.

For articles with a seasonal demand, however, the company decided to follow its established policy of placing orders in advance. At the same time, it advised the manufacturers to be cautious in their purchases of raw materials, inasmuch as the prices of raw material might decline. The company followed this policy because of its conviction that continuous production was of benefit to consumers from the standpoint of excellence and uniformity of quality. It was also of advantage to the company

to cooperate with its manufacturers to the extent of leveling their production peaks.

Pursuant to the purchasing policy, therefore, which the Rogers Company decided to follow during 1923, in the fall of that year the company had ordered approximately 75% of its 1924 spring goods. Since silk prices continued high, however, staple silk hosiery was ordered no more than 90 days in advance of the company's requirements.

II. GENERAL MOTORS CORPORATION—READJUSTMENT OF ADMINISTRATIVE POLICIES AND PROCEDURE TO PREVENT RECURRENT OF LOSSES UNDERGONE IN 1920-1921

The following quotation was taken from the annual report to the stockholders of the General Motors Corporation for the year ended December 31, 1922:

On January 1, 1918, General Motors Corporation had total assets of \$133,789,724, including \$11,971,603 good-will, patents and copyrights. On January 1, 1923, assets total \$522,335,034, including \$22,370,811 good-will, patents and copyrights. At the earlier date the corporation consisted of the four passenger car manufacturing divisions—Buick, Cadillac, Oakland, and Oldsmobile—and the General Motors Truck Division, having a capacity of about 223,000 cars and trucks per annum, as measured by maximum quarterly sales prior to 1918. The corporation owned no plant manufacturing small cars, had no owned supply of accessories, such as lighting, starting and ignition sets, roller bearings, ball bearings, and so forth; it had no central experimental or development laboratories. Since January 1, 1918, the construction and expansion program has brought the corporation to a manufacturing capacity of 750,000 passenger cars and trucks per annum, has placed it in position to manufacture all of its electrical equipment, including spark plugs and warning signals, all radiators, and antifriction bearings, wheel rims, steering gears, transmissions, engines, axles, and open bodies. Through its stock holdings in Fisher Body Corporation, it controls the manufacture of its supply of closed bodies. The program was not developed as a whole but resulted from the constructive planning of three years. Confidence in the future was not misplaced, as sales in the last nine months of 1922 were at the rate of 515,000 units per annum, or 70% of the present manufacturing capacity; and single months have reached 80% of capacity. Estimates for the future indicate that the full manufacturing output will be required at no distant date.

The total cost of carrying out this program may be summed up as follows:

Real Estate, Plant and Equipment, Tools, etc., acquired three years, 1918 to 1920, inclusive.....	\$214,605,825
Invested in allied and accessory companies.....	66,050,279
Total	\$281,556,104

The cash for carrying out this work was supplied from several sources, as follows:

From Earnings

Net earned income, three years, 1918 to 1920, exclusive of extraordinary write-offs of year 1920.....	\$193,801,804	100%
Less: Federal taxes paid.....	\$47,274,750	24%
Dividends paid	57,386,370	30%
Balance of earned income available for program	89,140,684	46%
Net amount available from reserve accounts	13,304,246	
Total cash available for construction and expansion program, from operations of 1918 to 1920 inclusive.....	\$102,534,930	27%

From Sale of Securities

Proceeds from sale of common stock.....	\$ 98,494,835
Proceeds from sale of 6% debenture stock	25,425,000
Proceeds from sale of 7% debenture stock	10,998,700

Total cash due for construction and expansion program from sale of securities, 1918 to 1920, inclusive.....	\$34,018,535*	35%
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From Fund for Bonus, etc

From funds set aside in cash for bonus, etc., but paid in newly issued stock...	13,569,144	3%
Total cash available from all sources	\$251,022,609*	65%

Securities Issued in Payment for Properties

Were		
Debenture and common stock.....	\$122,141,520	
Purchase notes for part payment Fisher Body Corporation stock.....	9,840,000	
Mortgages assumed on properties purchased	1,629,070	
Total value of securities issued.....	133,610,590	35%
Total amount available for construction and expansion program.....	\$384,633,199	100%

SUMMARY

Total funds provided	\$384,633,199
Total expended on capital account.....	281,556,104
Balance available for working capital.....	\$103,077,095
Net working capital, January 1, 1918.....	65,605,969
Net working capital provided under program.....	\$168,683,064

* Of this total \$3,881,879 only remained uncollected on January 1, 1921.

As the net working capital requirement of today, operating under a schedule almost identical with that laid down for the year August, 1920, to August, 1921, is about \$126,000,000, the net working capital available under the original program, about \$168,000,000, should

have been much more than sufficient for the lesser operations of the year 1921. From the above it is clear that full provision for the construction and expansion program of the years 1918 to 1920, including working capital, was made prior to the end of the year 1920. Therefore, this program was in no wise responsible for the financial difficulties under which the corporation labored during the latter part of 1920 and the year 1921. Explanation of these difficulties lies in another quarter.

OPERATIONS OF THE YEARS 1920, 1921, AND 1922

At the close of the year 1920 the net working capital, exclusive of notes payable, in use prior to the write-off of inventories, was \$242,830,271 or \$116,354,034 above the amount required (December, 1922) to carry more than double the production of the earlier period. This made it necessary to borrow a maximum of \$82,784,824 (on October 31, 1920). The reduction of the surplus materials purchased at high prices, and of inventory and other commitments made prior to December, 1920, resulted in a total liquidation loss of \$84,869,893.

This condition of affairs was not reached without anticipatory warning. In the month of March, 1920, the president presented to the executive committee a schedule of proposed production made possible by the construction and expansion program then well on toward completion. He proposed that this schedule be adopted for the year August, 1920, to August, 1921. Though approved at the time, the schedule was revised in the month of May, 1920, to a proposed production almost identical with that in force during the last nine months of 1922. At this early date (May 13, 1920), the executive committee and finance committee noted the continued increase of inventories (to \$167,965,641 on April 30, 1920). The chairman of the finance committee explained fully to those in charge of operations of the corporation the necessity of control, and, at his suggestion, a committee was appointed to allot among the divisions of the corporation the \$150,000,000 considered available for inventories. The chairman also stated that it was necessary not to increase inventories beyond this amount during the succeeding 12 months.

The report of the inventory allotment committee was presented and approved before June 1, 1920. It was unfortunate that the rulings of the executive and finance committees and their cautions remained unheeded. As a result, inventories reached a total of \$209,000,000 at the end of October, 1920, exceeding by \$60,000,000 the allotments of the executive and finance committees and by \$100,000,000 the amount in actual use during the active summer of 1922. This excess accounted for about 70% of the borrowings at that time.

It was doubly unfortunate that the spirit of the committee rulings was totally disregarded by a few of the divisions, the losses of which, due to expanded inventories and commitments for the future, amounted to \$48,579,872, or much more than the total operating deficit of the whole corporation during the year 1921. The operating losses of these

divisions during the liquidation and reconstruction period of 1921 added \$15,330,938, making a total of \$63,910,810 on their account.

Though the losses above enumerated were enormous, it should be fully realized that they were not typical of the operations of the corporation as a whole; in fact, they related to 10 divisions only out of a total of 34. The sales and profits of the 24 normally operated divisions are shown below in Group I; the sales and profits of the 10 unsatisfactory divisions are shown in Group II. Of these 10, 5 were of small importance and were liquidated in 1921. Another, the Samson Tractor Division, is dealt with separately. The remaining 4 divisions of Group II have since been restored to more normal conditions and to an earning power in line with the divisions classed as Group I.

The following tabulation will better illustrate the relative importance of the two groups:

ITEM	GROUP I	GROUP II
Divisions involved	24	10
Net Sales:		
1920	\$362,409,005	\$204,911,509
1921	208,438,291	96,048,952
1922	206,756,778	161,713,088*
Net Profits:		
1920	68,525,545	18,336,600
1921	22,802,537	15,330,938**
1922	59,078,448	11,007,517†
Extraordinary write-offs, inventory adjustments and liquidation losses, 1920-1921-1922	36,290,020	48,579,872
Extraordinary write-offs compared to 1920-1921-1922 sales	4.2%	10.5%

* Does not include liquidating sales of Tractor Division.

** Loss.

† Does not include \$5,688,091 liquidating loss of Tractor Division.

TRACTOR INVESTMENT

In the year 1917 General Motors Corporation purchased the stock of the Samson Sieve Grip Tractor Company of California. This company and its product had been under investigation by the president, and the purchase was made by him. He became general manager of the Samson Tractor Division of the General Motors Corporation. On his recommendation the executive and finance committees voted appropriations for permanent investment in the tractor division amounting to \$10,428,416, afterwards increased by \$3,021,034, principally to cover overrun expenditures, and, in May, 1920, allotted to the division \$7,000,000 for inventories. At the close of the year 1919 the division's new facilities for the production of 100,000 tractors per annum were reported practically complete. (At that time the total investment amounted to \$7,485,346.) On October 31, 1920, the fixed investment in the tractor division amounted to \$10,905,927, and work-

ing capital to \$18,595,144, a total of \$29,501,071. The operating losses prior to December 31, 1920, and exclusive of extraordinary write-offs of that year were:

1917	\$ 24,467
1918	1,868,986
1919	1,823,883
1920	8,228,956
Total	\$11,946,292

After the tractor was fully developed and priced at \$650, it was found that it could not be marketed profitably. Prices were raised only to discover that sales could not be made in competition with more cheaply designed tractors. In the meantime, numerous commitments for materials had been entered into, with a view to producing 70,000 tractors of this class; and, in addition, materials for producing 60,000 tractors of another class. This was the situation as it appeared December 1, 1920. The loss in liquidating inventories and commitments of this division amounted to \$21,293,752, in addition to the operating losses above noted of \$11,946,292, making a total loss incurred of \$33,240,044. Today the plant of the tractor division has been turned, in greater part, to other uses. As the liquidation of this division has been completed, no further operating loss is to be expected.

The localization of the troubles of 1920-1921 makes it possible to present a fair comparison of the corporation's earnings of the years 1919-1922, inclusive:

Item	1919	1920	1921*	1922
Gross capital employed at end of year.....	\$469,737,345	\$604,806,868	\$404,914,312	\$522,335,034
Earnings before divi- dends and federal taxes	90,517,519	67,779,710	21,116,697	62,611,244
Federal taxes	30,000,000	3,894,000		6,250,000
Earnings for stockhold- ers before write-offs.\$ 60,517,519	\$ 63,885,710	\$ 21,116,697	\$ 56,361,244	
Write-offs of inven- tories and commit- ments		26,002,188	59,796,490**	4,553,796
Net earnings as per annual statements..	60,517,519	37,883,522	38,679,793†	51,807,448
Sales, cars and trucks.	391,738	393,075	109,396‡	456,763

* Group I divisions only.

** Includes losses of Group II divisions.

† Loss.

‡ Sales Group I divisions only.

The earnings of these four years, 1919 to 1922, inclusive, as shown above, are summarized on the opposite page.

SUMMARY

Earnings:

Total earnings for four years, 1919-1922, before taxes (including Group I divisions only for 1921).	\$242,025,170
Less extraordinary losses (Group I divisions, 1920, 1921, 1922)	<u>36,290,020</u>
	<u>\$205,735,150</u>

Disposition:

Cash dividends, debenture and preferred stocks.	22,572,176
Cash dividends, common stock.	65,863,224
Total cash dividends.	\$ 88,435,400 43%
Stock dividends paid on common stock.	12,940,435 6%
Federal tax provision.	40,144,000 20%
Total losses, Group II divisions.	63,910,810 31%
Surplus	<u>304,595</u> 00%
	<u>\$205,735,150</u> 100%

Thus has General Motors Corporation, in the brief period of five years, expanded its plant investment five times under a program that was completely financed as work progressed. The wisdom of the plan is shown by the fact that there is now demand for 80% of the facilities provided, with promise of full use of these facilities at an early date. The plan is one that calls for no apologies for its inception and development, but it should be a source of satisfaction and pride to those who were responsible therefor.

Excepting for the year 1921, earnings of the corporation have been satisfactory. The year 1921 showed a shrinkage of 45% in number of cars produced, and 44% in volume of sales, when compared with an average of the two preceding years, a record not in itself abnormal, considering the general trend of economic conditions at that time. The greater part (68%) of the corporation's business in 1921 was satisfactory though suffering losses through the rapid decline in values, but these losses, if averaged into the period in which they justly belong, leave a satisfactory profit for these years as a whole.

Narrowing now to the smaller part (32%) of the business of 1921, involving only four divisions now active, we find conditions accounting for 70% of the loans that were a matter of great concern during the winter of 1920-1921, and accounting for losses of \$63,000,000. This localization of the source of trouble is a comfort for it reduces the likelihood of recurrence. There seems to have been no real necessity for the management of the divisions involved in losses to have faced greater troubles than those experienced in other divisions of the corporation where conditions were satisfactory.

Three considerations make recurrence of the 1920-1921 disaster seem unlikely, if not impossible. First, it is doubtful if the sharp decline in prices witnessed during that period will recur. The extreme rise was due to the war and deflation was more precipitate than ever before known. Second, a complete system of inventory and purchase control has been established in the corporation. This system embraces a monthly statement of inventories and future commitments

beyond which the divisions are not permitted to proceed without specific authority. Under this system a shrinkage in business such as occurred in the years 1920-1921 could not result in a repetition of the inventory troubles of those years. Third, the system of consolidated cash control installed during the year 1922 makes possible more effective use of the funds of the corporation.

The purpose of the above recital is to show definitely that the troubles of past years were not related to an ill-financed expansion program or to delay in receiving the proceeds of financing. It is quite certain that the funds provided before the close of the year 1920 were sufficient to carry out the whole program and also to finance new business offered during the year 1921 and the first half of the year 1922. It is equally certain that disregard for control of inventories and purchase commitments cost the corporation a very large sum of money, of which the greater part might have been saved by proper safeguards in divisions now differently managed. Further, it is important to the stockholders to know that the financial misfortunes of the corporation in the past were only slightly related to the manufacture and sale of its products, but that these misfortunes were directly related to loose and uncontrolled methods which are now corrected.

The General Motors Corporation was formed in 1908 to act as a holding company for the stock of several automobile manufacturing companies. In 1916, it was reorganized, and the functions of actual management were taken over. Each individual company or division, however, retained its identity. It remained a complete financial unit in that it received its own income, made its own expenditures, and did its own borrowing. The nature of the control by the General Motors Corporation was that of advice without definite, applicable means of enforcement of such advice. Future plans for each company were drawn up in conferences with the executives of the General Motors Corporation, but in actual practice the executive heads of each division were allowed to conduct the affairs of their divisions as they deemed wise. The theory of the control by the General Motors Corporation was decentralization.

In addition to the Buick, Cadillac, Chevrolet, Oakland, Oldsmobile, and GMC trucks, the General Motors Corporation manufactured these nationally advertised trade-mark products: Fisher bodies, Delco light and power plants, Frigidaire, Hyatt roller bearings, New Departure ball bearings, Klaxon horns, Harrison radiators, Delco-Remy starting, lighting, and ignition systems, Jaxon rims, and AC spark plugs.

Geographically, the manufacturing plants were distributed as follows:

California	2 cities	New York	4 cities
Connecticut	3 cities	Ohio	3 cities
Illinois	1 city	Pennsylvania	2 cities
Indiana	2 cities	Texas	1 city
Missouri	1 city	Wisconsin	2 cities
Michigan	7 cities	Canada	2 cities
New Jersey	3 cities		

Under the supervision of the General Motors Export Company and General Motors, Limited, of Great Britain, which had sales branches in many parts of the world, the General Motors Corporation was developing extensive markets for motor cars abroad.

The situation resulting in 1921 from the policy of decentralized control is described in the foregoing quotation from the annual report of 1922. The problem that the company faced was that of devising a method of control so centralized that the mismanagement of 1921 might not be repeated. At the same time it was necessary that the method be sufficiently decentralized to allow the chief executives of the different divisions freedom of judgment, and to give them a sense of responsibility. It was necessary, furthermore, that the executives of the General Motors Corporation be left free to devote their time to questions of fundamental policy rather than to administrative routine. The executives were convinced that in an organization so large and widely diversified as the General Motors Corporation, a clear and well-recognized distinction should be made between questions of fundamental policy and the administrative application of such policies.

The following method of inventory control was devised and adopted in 1922. At the beginning of each year the executives in charge of each of the divisions were to prepare forecasts of sales for the coming year and detailed estimates of the working capital required to finance the production decided upon. The forecasts were to be threefold: First, an "optimistic" forecast, which was to be an estimate of the largest sales that might be expected; second, a "conservative" forecast, which was to be an estimate of the sales really expected by the executives; third, a "pessimistic" forecast, which was to be an estimate of the sales under the worst conditions that might be expected.

On the twenty-fifth of each month, the executives in charge of

each division were to prepare forecasts of sales and production in dollars for the current month and the following three months. Forecasts were also to be made in units for divisions in which this information was significant. With these forecasts as a base the same executives were to estimate in detail the amount of inventory on hand at the end of each of the four months. The sum of inventories and commitments at the time of the forecasts should not extend beyond what was needed for the following four months. The estimates and forecasts were forwarded each month to the executive in charge of the general group. The different divisions were classified into groups according to whether they were motor car, accessory, or research divisions. There was an executive in charge of each group. They then were forwarded to the president of the General Motors Corporation. The estimates and forecasts of each division executive required the approval and authorization to act of both the group executive and the president of the General Motors Corporation. In the president's office the reports were scanned carefully by an assistant who made notations of any unusual figures. The president spent about one day each month in analyzing such reports.

In order that the system would be sufficiently flexible to provide for situations in which it was desirable to make commitments for materials in excess of four months' supply, it was provided that any division head might fill out a form for these forward commitments, stating the amount and reasons therefor. This also was forwarded to the group executive and the president of the corporation. Such commitments required the personal approval of each of these executives.

Assistants in the president's office summarized the foregoing estimates into one forecast for the General Motors Corporation as a whole, to include inventory, turnover, production, sales, finished stock on hand, and commitments. Running comparisons of all estimates with actual results embracing an eight months' period, were made in the president's office at the end of each month for each division. These provided a basis for interpreting current forecasts in the light of their accuracy during the preceding four months. The comparisons for each division were summarized into one comparison for the General Motors Corporation as a whole. This was submitted monthly by the president to the finance committee. In order to stimulate the different divisions to

strive for accuracy in making their forecasts, a general score sheet was prepared in the president's office and forwarded to each of the divisions every month. On this sheet the divisions were listed in the order of the percentage of accuracy of estimates.

In addition to this administrative procedure for the control of inventory, a new method of cash control was devised and adopted. Under the old method each division managed its own cash; each made its own collections and disbursements, and did its own borrowing. Thus it had happened that one unit might be under the necessity of borrowing heavily, handicapped by heavy local demand for banking accommodations; at the same time another unit might have excess deposits drawing little or no interest. Transactions between the different companies were made on a cash basis and approximately \$11,000,000 was always in the process of transfer. The problem in 1922 was to devise a method of cash control whereby borrowings could be made more easily and at better rates of interest, and intercompany transfers facilitated.

Under the new method of cash control central reservoirs were established for the funds of all units, and telegraphic remittances of funds were substituted for the slower remittances by mail. The control of cash by each unit was done away with and replaced by a general cash fund controlled by the executives of the General Motors Corporation for the benefit of all units.

Each sales branch was to have one bank account at which average deposits amounting to 30% of the lines of credit extended were to be maintained. All such deposits would receive interest at 2%. A maximum and a minimum amount for each deposit were established, the difference between such a maximum and minimum to equal the average cash receipts deposited by each sales branch in three days' time. The maximum was established at a point slightly higher than 30% of the line of credit and the minimum slightly lower in order that the average deposits might equal 30%. As soon as the deposits in any bank reached the maximum, the bank was to wire through the Federal Reserve System an amount equal to the difference between the maximum and minimum to one of a dozen New York or Detroit banks designated as General Motors Corporation depositories. Instead of settling intercompany transactions by checks and mail, such transfers were to be made on white slips which were reported to the General Motors Corporation depositories. These banks were to balance such transactions

at frequent intervals, thereby performing the functions of a clearing-house. In this way the \$11,000,000 formerly tied up in the process of intercompany transfers was reduced to less than \$1,000,000.

Opposition to the introduction of this system was encountered on the part of those units which had been for the most part in a favorable credit position and were loath to give up the control of their own cash. The executives of the General Motors Corporation, however, were able to convince them that cash always would be available to them when needed and that central control of cash would be to their advantage both in times of prosperity and of strain. Each division was to submit in advance to the General Motors Corporation a weekly budget for its expenditures. Such a budget required the approval of General Motors Corporation executives in the same way as did inventory and commitment statements, but in practice the budgets of the different units were accepted without question. Upon the approval of their budget the divisions were free to draw cash up to the amount of the budget.

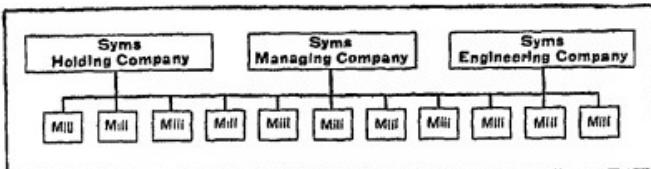
The introduction of this system reduced the number of bank accounts substantially; it secured a standard rate of interest on all deposits somewhat higher than the average rate before received, and it increased the lines of credit available to the units of the General Motors Corporation as a whole. The amount of cash needed was reduced and its effectiveness was increased.

B. THE EXPANSION OF OPERATIONS

12. SYMS MANAGING COMPANY—EXPANSION POLICY OF A COTTON MILL IN MARCH, 1920

The Syms Managing Company was situated in a well-known mill city in North Carolina and managed 11 cotton mills situated in that state. The Syms Company was associated closely with the Syms Engineering Company and the Syms Holding Company. Each company had its own board of directors which was composed, in part, of representatives from each of the other companies. The actual operation of each company was entirely distinct from that of the others. The Syms Holding Company owned controlling stock in each of the cotton mills. The organ-

ization of the Syms Managing Company managed and advised each of the mills which was controlled by the holding company. The managing company received a fixed fee from each mill that it served. For the benefit of the mills and the managing company there was also the Syms Engineering Company which gave engineering advice and designed new construction desired by the mills or the managing company. The engineering company also received a fixed fee from the mills for each job performed. The figure below illustrates graphically the relationship of the different companies.



In March, 1920, the Syms Managing Company contemplated the expansion of one of the mills which produced ginghams sold under three well-established trade-marks. The mill was about 20 years old and represented an investment of approximately \$5,000,000. Fifty-one per cent of the stock was held by the Syms Holding Company, and the remainder was scattered among individual investors. Each year the mill had been able to show substantial profits. In 1919 and 1920, the demand for ginghams increased. The demand for ginghams never fluctuated in such extremes as did many other types of cotton goods. Ginghams were used extensively by persons of low income as a staple cloth for dresses. In times of business depression there was an additional demand from people of higher income who were forced to economize.

The executives of the mill and those of the Syms Managing Company stated that more ginghams could be sold if the productive capacity of the mill were increased. If the mill were expanded, more modern cotton machinery than that in operation could be installed which might aid materially in competition with other mills. The executives of the mill and those of the Syms Company were of the opinion that the increased demand for ginghams was permanent and that the mill should expand at that

time in spite of excessive building costs. The profit gained by securing a larger proportion of the increased demand more than compensated for the loss incurred by building at high costs. Since labor and material costs formed such a high proportion of the total, a higher cost of construction resulting in greater overhead charges was of less importance in this industry than in many others. There was a possibility that the current increased demand for ginghams was temporary, and that a decrease in demand would follow shortly.

The decision was made, however, to expand the mill at once. The Syms Engineering Company had already drawn up plans for the new construction, and contracts were made with an outside company to build. The cost was to be about \$2,500,000. To finance this the mill sold \$2,000,000 of 7% preferred stock. Heretofore, there had been no preferred stock outstanding. Neither the mill nor the managing company was willing to sell common stock, although this could have been done. If common stock had been issued it would have been necessary for the holding company to subscribe in cash for 51% of it to retain control and cash was not available. Ten days after the contract was let the price of cotton began to break. Customers reported that they were unable to sell the ginghams they had in stock. Indications in general business conditions, in the opinion of the executives, were that the great prosperity of the previous 12 months was at an end. The executives stated that the demand for ginghams was still great enough to justify the expansion of the mills. Nevertheless, if the demand were interrupted temporarily, postponement of the new construction was possible. Since there were more orders than could be filled, the mill might be operated at night for a short period. Opposition of cotton mill labor, however, was a serious objection to this. The laws of the state in which the mill operated forbade the employment of women at night, but it was possible to put male employees on the night shift and employ new women for the day shift. The construction company refused to cancel the contracts for less than \$60,000. Moreover, the Syms Engineering Company would lose its fee for the new construction.

The executives of the mill and of the Syms Managing Company stated that these costs were less than what might be saved for the mill, and, therefore, for the Syms Holding Company, by

postponing construction. They decided to cancel the contracts and postpone construction until building costs declined.

13. PENDER TEXTILE COMPANY—CONSTRUCTION OF NEW MILL BUILDING IN 1920

The Pender Textile Company was a long-established cotton manufacturing company in New England. It produced fancy cotton goods, known as sateens, coutils, and twills. The mill machines had been replaced constantly as improved types were developed. The mill building, however, was nearly 100 years old. In 1919, it became necessary to replace machinery in two manufacturing departments. The section of the building devoted to one department did not allow the installation of new machines in locations where their operation was most economical; the other department contained space for only five machines, although six machines could be used to advantage, if sufficient room were available. Analysis of the problems connected with the installation of the new machinery brought up the question of whether or not to erect a new mill building to replace the old structure.

The old building was of a type of construction which had become obsolete. Economies of production to be secured from proper location of machines could not be realized. In one instance, material in process was trucked one-fifth of a mile from one machine to the next. It was impossible to remodel the old building in order to adapt it to modern machinery.

In November, 1919, a firm of mill engineers which the company consulted recommended the erection of a new building. In their report the engineers stated that proper arrangement of machinery was as important in successful cotton manufacturing as possession of modern equipment. They estimated that in a new building of the same capacity, 20% fewer employees and 33% less supervision were necessary than were required in the old building. It was pointed out, also, that the existing storage facilities for raw cotton were inadequate.

The engineers emphasized the beneficial effect of a new building on the employees. The old factory had small windows which did not allow proper ventilation and light. In the weaving room, operators worked under gas light. Sanitary conditions were

not modern. Hence, in the active competition for labor, the company could retain its employees more easily if a new building, with sufficient light, adequate ventilation, and more sanitary working conditions were constructed.

Failure to replace the old building might make it more difficult to retain the most successful overseers and the men being trained for executive positions. Such men usually preferred to affiliate with a company which had a modern plant and progressive policies. Among both the executives and workers, a greater pride in the organization could be stimulated and the morale strengthened if the company erected a new building which exemplified the most advanced ideas in mill-building construction.

The Pender Textile Company made satisfactory profits during the first half of 1919, and in November of that year its current assets were more than \$2,500,000 in excess of current liabilities. Demand for its product could not be fulfilled with the limited capacity of the old plant. In a new building, operation of the plant 24 hours per day was possible, as contrasted with the single shift in the old one. In addition to the increase in capacity allowed by continuous operation, 20% more ring spindles were to be added, bringing the total to 125,000.

Although it was possible to postpone the undertaking at that time, the treasurer knew that the old building had to be replaced within a few years. Other textile mills were erecting new buildings at that time. The excellent showing of the profit and loss statement, as well as the satisfactory excess of current assets over liabilities, prevented any difficulty in financing. The treasurer planned to reduce current assets by \$1,000,000 and secure \$1,500,000 from stockholders.

Despite the reduction to be secured in manufacturing costs by the erection of a new building, the Pender Textile Company was already in a favorable position to meet competition, by reason of its modern machinery. Although other mills occupied buildings constructed later than those of the Pender Textile Company, machinery in the former had not been replaced consistently in order to obtain economies of improvements. Since the company was not handicapped seriously in the competitive market, it was feasible to delay the new construction. The increase in building costs during 1919 was marked. In spite of shortage of labor and materials, there was a possibility that the demand for

new construction might be curtailed because of excessive prices. Such curtailment was likely to result in lower costs, but it was difficult to estimate when this condition was likely to develop, in view of the prosperity of general business conditions. In order to finance the new building, a reduction in current assets was necessary, and, although the current ratio was to be lowered to a point only slightly less than 2 to 1, the strong financial position of the company was weakened by a transfer of current assets to fixed assets. Demand for cotton goods was extremely active, and no consideration was given to the possibility that it might decline to such an extent that the mill's increased capacity would become a burden rather than an advantage.

The amount by which the cost of the building exceeded stockholders' subscriptions was to be paid from current earnings, and because of the ease of financing, the company placed a contract for construction in December, 1919. Capital stock was increased by two-thirds, and its sale to stockholders at a premium of 50% above par yielded \$1,500,000.

While construction was in progress, building costs advanced steadily. By the time the mill was completed, the total cost to the company exceeded the original estimate by \$1,000,000. The machinery was transferred to the new structure, and the mill was prepared to produce at a lower cost than previously had been possible. Demand for cotton goods, however, had declined sharply. The value of inventory decreased, so that with the extra cost of building, current assets were \$500,000 less than current liabilities. Although the company's working capital

PENDER TEXTILE COMPANY—BALANCE SHEET AS OF APRIL 30, 1921
(*In thousands of dollars*)

ASSETS	LIABILITIES
Real Estate and Machinery	Capital Stock 2,499
4,668	Accounts Payable 150
Inventories 1,458	Notes Payable 2,750
Deferred Charges..... 53	Reserve for Depreciation 54
Cash 485	Reserve for Taxes..... 75
Notes and Accounts Receivable 1,235	Other Reserve 665
	Capital Surplus 500
	Profit and Loss Surplus. 1,206
7,899	7,899

always had been adequate without resort to outside creditors, it became necessary, during the decline in the cotton goods market, to secure loans from banks. The balance sheet on April 30, 1921, was as given on page 323.

The income for the year ending April 30, 1921, was:

Net Earnings	\$219,000
Dividends	294,000
Deficit to Surplus	75,000

It was not until the spring of 1923 that a full production schedule was effected.

14. WAUBESA MILL—EXPANSION IN THE SOUTH IN 1923

The Waubesa Mill, a cotton mill situated in Rhode Island, manufactured print cloths and sheetings. In addition to the cotton mill, print works which consisted of a bleaching and finishing plant were operated. Besides the mill's own products, grey cloth was purchased from other mills, principally in the South, to be finished in the print works. Forty per cent of the products of the bleachery was of Waubesa cloth, and 60% of the cloth was purchased outside. Although part of these bleached goods were sold in New England and other eastern states, most of them were sent to St. Louis, Cleveland, Kansas City, and Indianapolis. The largest item of cost of these goods when delivered, was transportation. The bleaching and finishing cost was relatively low. During the decade of 1910 to 1920 it became apparent that these bleached goods were one of the most profitable products of the Waubesa Mills.

In March, 1923, the directors discussed the advisability of expanding the bleachery capacity in order to supply more of this western market. At the same time, they decided to add wide sheetings to the products already manufactured. There were few manufacturers of such sheetings, and the demand for them in western markets was active. There were numerous converters who bought these wide sheetings unfinished at the various mills, had them finished, and sold them in the western markets. The existence of these converters suggested that there was an excellent opportunity for a well-established mill to manufacture these sheetings and sell them in the western markets. The

directors held the opinion that the mill could give better service to customers than could the converters because it could guarantee unvarying quality at all times.

In 1922, a study had been made of the relative advantages of the North and South as locations for the new mill and print works. Labor costs appeared to be less in the South than in the North, and for such a product it was practicable to employ cheaper labor. This differential in cost was not expected to continue indefinitely, as the cotton mill business expanded in the South, but its continuance seemed probable for eight or ten years. The South, moreover, had two permanent advantages. It was nearer to the mills from which the grey cloth for bleaching was purchased and also to the middle western market. Inasmuch as transportation costs were important, these two factors favored location in the South.

The directors did not desire to postpone action for any length of time, because other northern mills also were considering expansion in the South for the production of similar cloths. Any delay, therefore, handicapped the Waubesa Mill in competing for the market. An option had been obtained on a particularly favorable site which had an ample supply of water suitable for bleaching, and was in the vicinity of numerous grey goods mills. If this site were not bought immediately, the directors were apprehensive lest other Northern mills should secure it. On the other hand, compared with pre-war levels, construction and machinery costs were still high.¹ Both had declined from the peak in 1920 to a low point reached in April, 1922. The average cost of construction had risen from its low point, but the directors were of the opinion that current prices were low compared to

¹Tuttle Index of Construction Costs. 1914=100; 1920=228.

	1921	1922	1923
January	241	152	192
February	220	152	196
March	197	152	196
April	186	152	204
May	176	157	204
June	172	169	
July	167	171	
August	161	174	
September	160	190	
October	157	192	
November	154	192	
December	153	192	

what they might be in the near future. At least, the directors did not expect the costs to be much lower in the next five or six years. Several directors were apprehensive lest the actual costs might be higher than the bids that had been obtained.

It was estimated that the sum of \$2,500,000 was required for the proposed construction. To finance this, no additional capital was needed. Several times the mill had financed expansion from current funds, and this practice was common among New England woolen and cotton mills. The current financial position of the mill was strong, and its line of credit at the banks was not being used. The necessary money could be spent, therefore, without endangering the mill's credit standing. Although cash was not available, the mill could sell notes on the open market, where its commercial paper was well known and highly regarded.

The sales of the mill had been heavy in the preceding few months, and the rate of earnings was as high as at any time in its history. The directors predicted favorable business conditions for the next few years with possible temporary fluctuations. It was decided to start construction in the South immediately. The necessary paper was sold on the open market, and it was hoped that this could be repaid from future earnings, although if necessary, more stock could be sold at a subsequent date. The construction of the mill was expected to be finished in the summer of 1924.

By the summer of 1923, construction costs had risen and the directors did not regret that the expansion had been undertaken in March. Although the demand for textile goods had decreased materially, this appeared to be only a seasonal fluctuation.

15. T. T. LANE WHOLESALE GROCERY COMPANY—EXPANSION BY CONSOLIDATION IN 1919

The T. T. Lane Wholesale Grocery Company, which sold imported food products, groceries, and provisions, had a wide distribution throughout the eastern section of the United States, and was well known as one of the leading companies in the trade. It had been unable, however, to compete successfully in the Middle West with local wholesalers, except in imported products and a few specially branded canned foods, because of the additional

cost of freight rates and inability to render quick delivery service. Late in 1919, information reached the company that the Wholesale Provision Company, a well-established company in St. Louis, was willing to sell its business, and the executives of the T. T. Lane Wholesale Grocery Company considered the advisability of buying it.

The company decided previously that expansion in the St. Louis territory could be accomplished more easily by the purchase of an established business than by the establishment of the company's own branch office and warehouse. To build up a new sales organization required time for development and great expense, since the name was little known in that locality. The territory was covered adequately by the existing wholesalers, and competition was keen.

The advantages in purchasing the Wholesale Provision Company consisted chiefly in its firmly established position in the trade and its enviable reputation for integrity. As successor to this company, the T. T. Lane Wholesale Grocery Company had the opportunity to secure at once both good-will and prestige. A well-organized sales force existed and the salesmen, because of their acquaintance with the retailers in their territories, could continue to secure orders for the successor to the Wholesale Provision Company. A mail-order business, which had been developed carefully until it constituted almost 20% of the volume of sales, also accrued to the purchaser.

Negotiations were undertaken to determine the terms on which purchase might be made. The balance sheet of the Whole-

WHOLESALE PROVISION COMPANY—BALANCE SHEET AS OF
DECEMBER 1, 1919

ASSETS		LIABILITIES
Cash	\$ 158,000	Notes Payable.....\$ 500,000
Accounts and Bills Receivable	314,000	Accounts Payable .. 130,000
Inventory	776,000	Common Stock and Surplus 663,000
Deferred Charges...	4,000	
Total of Current Assets	\$1,252,000	
Plant and Equipment	41,000	
		<u>\$1,293,000</u>

sale Provision Company as of December 1, 1919, is given on the preceding page.

It was proposed to effect a consolidation by purchase of the assets of the company, rather than by purchase of the common stock, which was owned by four men. The result was practically the same by either method, since the assets were acquired. The plan suggested, however, gave clear title to the assets without the possible appearance, later on, of claims against the corporation. The proceeds of the sale were to be distributed among the common stockholders of the Wholesale Provision Company, and liquidation of the corporation was to follow.

The assets consisted of the following: entire stock of merchandise and supplies in merchantable condition; fixed assets consisting of furniture, fixtures and equipment; accounts receivable; a long-time leasehold; good-will, trade-marks, trade names, and labels.

The price paid for merchandise was fixed at the actual net cash cost of the inventory on hand on December 27, 1919, or market value, whichever was lower. Accounts receivable were valued at their face amount, with the guarantee by the vendor that all accounts were to be paid in 60 days. Accounts not paid within this time were transferred to the Wholesale Provision Company, which paid the purchaser the face amount. A portion of the receipts from the sale was to be deposited with a trustee by the vendor as a pledge of payment for all accounts so transferred. The price of the fixed assets was their book value less depreciation on December 27, 1919, provided that this value did not exceed the book value of each individual item on January 1, 1919. The leasehold was assumed by the purchaser. No separate price was stipulated for good-will, trade names, trade-marks, or labels.

These terms were approved by the executives of the T. T. Lane Wholesale Grocery Company. Merchandise inventory had been bought only for the purpose of resale to customers, and its cost was not excessive. The long-time lease was valuable to the holder inasmuch as rents had risen nearly 100% since it was made, and no separate price was asked for it. Good-will and trade names, which were secured without cost, were of great value to the company. A well-established demand existed for several of the brands.

The entire purchase price, with the exception of \$41,000 for fixtures and equipment, was an investment in current assets. This made possible the financing of the purchase by bank loans. The financial position of the T. T. Lane Wholesale Grocery Company on December 1, 1919, was represented by the balance sheet below.

T. T. LANE WHOLESALE GROCERY COMPANY—BALANCE SHEET AS OF DECEMBER 1, 1919

ASSETS	LIABILITIES
Cash	\$ 1,420,000
Inventory	5,282,000
Accounts and Bills Receivable	4,684,000
United States Liberty Bonds	172,000
Miscellaneous Inventory	24,000
Employees' Stock Subscriptions	59,000
Current Assets	\$11,641,000
Plant and Equipment	1,362,000
Investments	1,063,000
Deferred Charges	170,000
	<hr/>
	\$14,236,000
	\$14,236,000

It was known that the Wholesale Provision Company had been operated during 1919 without profit, in spite of the increase in prices during the year. This was ascribed to inefficient management. Expenses had not been analyzed carefully, and a profit and loss statement had been secured only twice a year. The stock-turn of six times a year was regarded as low by the T. T. Lane Wholesale Grocery Company executives, and could be increased by more able management. By installation of a complete accounting system, additional information on costs and monthly profit and loss statements could be secured. Employment of methods already in use in the central office of the T. T. Lane Wholesale Grocery Company gave an opportunity to realize profits from operations in the St. Louis branch. The purchase added 20% to the total sales volume of the company. Economies in management expense and advantages of increased buying power were made available.

It was impossible to estimate, however, how many sales might be lost by the change in name, since customers were not familiar with the Lane company. Although the good-will of the Whole-

sale Provision Company was transferred, it was not certain that the patronage of all its customers could be secured. No consideration had been given to the inflation of prices at the time and the danger of increasing inventory because of the condition of rising prices during future months.

The purchase was deemed an advantageous means of establishing a branch in St. Louis, and on September 2, 1919, a contract between the two companies was signed. The price was in excess of a million dollars, as indicated by the value of the assets on the balance sheet. In settlement, \$200,000, par value 7% cumulative preferred stock of the T. T. Lane Wholesale Grocery Company was taken at the rate of 98% of par value, plus accrued dividends. This stock was deposited by the Wholesale Provision Company as security for faithful performance of the contract and was to be released when all accounts receivable had been transferred or collected. The balance of the purchase price was paid in cash.

16. TUTTLE TIRE COMPANY—EXPANSION BY PURCHASE OF A BANKRUPT COMPANY

The Tuttle Tire Company was incorporated in 1916 for the manufacture of pneumatic automobile tires and tubes. The product was of high quality and soon became well known to motorists. Growth was steady and gradual; in 1922 total sales were \$6,500,000. In that year 450,000 tires and 407,500 tubes were made. Competition was keen in the sale of tires, because during the preceding prosperous period the capacity of the industry had been increased beyond the requirements of consumers. Price-cutting was prevalent, and the margin of profit for manufacturers was narrow. Early in 1923 the officers of the Tuttle Tire Company deemed it advisable to acquire a mechanical rubber goods department to supplement the manufacture of tires. They believed that satisfactory profits were realized in this industry. They were unwilling to undertake the establishment of a mechanical rubber goods department because of the time and expense necessary for the development of products, the lack of production experience, and the difficulty of introducing new products in the market. Several purchases had been considered but no action was taken. It came to the attention of the officers

that the Stuart Rubber Company, which had been operated by a receiver since January, 1921, might be purchased.

The financial position of the Tuttle Tire Company was strong.¹ It had realized liberal profits since its incorporation, and losses in 1920 and 1921 had not been serious. Although the company was one of the less important tire manufacturers, its product was distributed throughout the United States from 14 sales branches located in principal distributing centers. Sales were made from the branches to tire retailers. The balance sheet on March 31, 1923, was as given on page 332.

The Stuart Rubber Company was incorporated in 1901 and manufactured a variety of hoses, belting, molded goods, and hard rubber products. In 1906 production of pneumatic tire casings and solid truck tires was started. Tire operations were successful, and in 1916 an additional plant was acquired. Total sales in 1919 were \$18,000,000, approximately half of which represented the sale of tires. In anticipation of sustained prosperity, the officers of the Stuart Rubber Company during 1919 and 1920 placed contracts for raw materials in excess of the quantity usually required.

When commodity prices declined in the latter part of 1920 and 1921, the company was unable to pay for raw materials at commitment prices and to manufacture finished products to be sold at the low prices which prevailed. A receiver was appointed for the company in June, 1921. Although operations were continued, losses were incurred under the administration of the receiver, because of the inability of the management and the disorganized condition of the industry. Sales in 1922 were \$6,500,000.

The chief advantage for the Tuttle Tire Company in the purchase of the Stuart Rubber Company was the acquisition of

¹ The operating profit before deduction of interest, taxes, and so forth, and the addition to surplus for the years 1917-1922 were as follows:

Year	Operating Profit	Addition to Surplus
1917	\$ 59,000	\$ 22,000
1918	163,000	200,400
1919	584,000	471,200
1920	301,000	101,600
1921	215,000	290,800
1922	373,000	70,500

No dividends on common stock were paid during the years 1917, 1918, and 1919. In June, 1920, the regular quarterly dividend of 50 cents per share was resumed and paid regularly thereafter.

TUTTLE TIRE COMPANY—BALANCE SHEET AS OF MARCH 31, 1923

ASSETS	
Cash	\$ 345,700.00
Trade Acceptances	185,300.00
Notes Receivable	31,700.00
Accounts Receivable Less Reserves..	1,862,300.00
Inventories at Cost	2,668,000.00
Working Funds	22,800.00
Advances to Employees	<u>3,200.00</u>
Advance on Behalf of Employees'	
Stock Purchase	\$ 74,900.00
Deferred Charges	168,500.00
Plant and Equipment	1,662,000.00
Patents and Trade-Marks	<u>92,300.00</u>
	<u>1,997,700.00</u>
	<u>\$7,116,700.00</u>
LIABILITIES	
Notes Payable	\$1,200,000.00
Accounts Payable	365,200.00
Accrued Liabilities	<u>244,300.00</u>
Reserve for Adjustment of Tire	
Claims	\$ 40,200.00
Reserve for Depreciation of Plant	
and Equipment	541,600.00
Reserve for Contingencies	20,000.00
Reserve for Taxes	<u>57,700.00</u>
Declared Capital Stock, No Par	
Value	\$ 750,000.00
Working Capital—Cash and Book	
Value of Assets Acquired in Excess	
of Required Declared Capital....	<u>3,413,600.00</u>
Surplus	<u>484,100.00</u>
	<u>\$7,116,700.00</u>

an established mechanical rubber goods department. A consistent profit except for comparatively slight inventory losses was shown by the operations of this division of the company. The operating loss and most of the inventory loss occurred in the tire department. A well-organized sales department existed, and economical manufacturing processes had been developed. In addition to the rubber goods department, the solid truck tires division was profitable; its output constituted about 10% of the total sales volume. Competition in the sale of this product was

less active than in that of pneumatic tires, because the former was manufactured by only seven other companies. Addition of this product to those of the Tuttle Tire Company was considered a distinct advantage. By the purchase, furthermore, the economies of an increased output could be realized in the purchase of raw materials and the distribution of overhead expense. The Tuttle Tire Company, also, acquired the good-will and trade names of the Stuart Rubber Company. Although the quality of the Stuart tire was not as high as that of the Tuttle tire, the addition of the former brand increased the number of buyers to which the products of the Tuttle Tire Company appealed.

Notwithstanding the possibility of purchasing the company at an advantageous price, the benefits to be derived might be overbalanced by the disadvantages. A production capacity for pneumatic tires with an output one-half as large as that of the existing plant was acquired by the purchase, in addition to the mechanical rubber goods department. Profits realized from the latter might be offset by losses on tires. Severe competition existed in the industry, and the majority of tire manufacturers were operating on narrow margins of profit. There was no assurance that conditions in the tire industry were to improve immediately. The method of distribution for Stuart tires was disorganized; they were sold through exclusive retail agents in some localities and through several retailers in others. The officers of the Tuttle Tire Company had developed no comprehensive plan of distribution for both tires. It was uncertain whether or not the two sales organizations could be combined. Although the trade name Stuart was valuable by reason of its established position, ill will also was attached to it because of deterioration in quality. Since the two factories were located in cities 20 miles apart, it was impossible to foresee how completely control of operations could be centralized. The reorganization of both the production and sales departments of the pneumatic tire division at a time when the industry as a whole was depressed by an excess of production capacity over demand was a severe test for the energy and capability of the management.

The officers, however, decided to institute negotiations with the creditor's committee of the Stuart Rubber Company. In March, 1923, the committees representing creditors and stockholders had adopted a plan to reorganize the Stuart Rubber Com-

pany which necessitated subscriptions for new securities from stockholders of at least \$1,000,000. This amount was not secured and the plan was discontinued. The Tuttle Tire Company made the following proposal to the creditors' committee which was in control of the situation. The committee was to organize a new corporation called the New Stuart Tire Company, with an authorized capital of 50,000 shares of no par value common stock. The committee was to assign to the new company all the claims against the old company which had been deposited with it, and in return to receive the total common stock of the new company. A receiver's sale for the Stuart Rubber Company was to be arranged, at which the new company could bid for the property. It could offer for payment cancellation of the total creditors' claims and the assumption of the receiver's certificates and reorganization expenses. Merchandise claims amounted to \$2,600,000 and bank claims to \$2,900,000. The receiver had issued \$1,900,000 of certificates, and the expenses of the organization committee were approximately \$175,000. All claims except \$70,000 had been deposited with the creditors' committee. If the new company's bid was successful the creditors' committee was to transfer the total issue of common stock which it held to the Tuttle Tire Company. In return the latter would agree to guarantee payment of obligations assumed by the new company.

In addition, the Tuttle Tire Company was to transfer a portion of its common stock to the creditors' committee for payment of creditors who had deposited their claims. Distribution among creditors was to be at the rate of $1\frac{2}{3}$ shares for each \$100 of claims against the old company originally held by banks and by creditors who had made deliveries of merchandise up to 80% of the total of each claim. To creditors who had claims for breach of contract, but had not made deliveries of merchandise, $1\frac{2}{3}$ shares were to be transferred for each \$100 of claims up to 55% of their amount. It was stipulated that not more than 65,000 shares were to be paid. Since the market price of the stock was \$20 a share, the value of the stock paid was approximately \$1,900,000, and the number of shares issued was 150,000. Cash in the amount of \$2,082,000 was paid to retire the receiver's certificates, pay committee expenses and 10% on the non-participating creditors' claims of \$70,000. Total assets of the Stuart Rubber Company were approximately \$7,500,000; the plant was

valued at \$3,840,000. Under the terms of the offer these were acquired at a net cost to the company of about \$4,000,000.

The plan was accepted by the creditors' committee. The officers deemed its adoption advisable in order to acquire the mechanical rubber goods division, and in June the purchase was completed.

17. HARTWICK MINING COMPANY—CONSOLIDATION TO EFFECT PRODUCTION ECONOMIES¹

In 1922, the Hartwick Mining Company produced 70,000,000 pounds of copper, or about 3% of the total world output. Contiguous to it were the properties of four other companies, in each of which it owned from 25% to 51% of the capital stock. The companies were operated separately, although sales were made exclusively through the Hartwick Mining Company. In the spring of 1923, the president of the Hartwick Mining Company proposed that a consolidation be effected, in order to operate the mines as a whole and thereby effect production economies.

The properties of the Abbott Copper Mines, the Bright Mines, Incorporated, the Hartwick Mining Company, the Noyes Copper Mining Company, and the Richardson Mining Company were situated along the outcrop of a vein of copper. The Hartwick Mining Company had been in operation for 60 years; the life of the others ranged from 20 to 50 years. In this region copper was mined at cost ranging from 8½ to 14½ cents per pound; the average of 10½ cents was relatively high; in some of the mines in Chile the metal was being produced at a cost of 7 cents per pound.

At this time, the Bright Mines, Incorporated, the Noyes Copper Mining Company, and the Richardson Mining Company, which were unable to produce copper profitably at less than 13, 14½, and 13½ cents respectively, were closed. The properties were smaller than those of the other two companies. A law of the state required that at least two connected shafts be maintained on the property of every mining company; on the properties of the Bright Mines, Incorporated, and the Noyes Copper Mining Company, one shaft was adequate to secure the ore and

¹ See "The Organization of the Copper Market," by F. E. Richter, *Harvard Business Review*, vol. 1, p. 196.

the maintenance of the other was uneconomical. The ore, however, contained a smaller percentage of copper than that found in adjacent property and deeper shafts were necessary to reach the deposits.

Since these three companies did not own stamping mills, their ore was sent to those owned by the Abbott Copper Mines and the Hartwick Mining Company. All the companies sent their copper to the smelters of the Hartwick Mining Company. These conditions made it necessary that the ores from the different companies be kept separate while they were being refined, and, since some contained inadequate amounts of fluxing agents, such as iron and silica, and others a superabundance of these, a distinct waste was incurred. Shops, pumps, and air compressors had to be maintained by each company; these could not be operated economically because output could not be maintained. Since a law of the state provided for boundary barriers 20 feet on each side of a dividing line, each mine had many blind drifts into which compressed air had to be pumped for ventilation. Those boundaries also made it necessary in many cases to haul ore underground long distances.

When all the mines were in operation, there was an inadequate supply of labor in the mining region to man the shafts fully. The homes of the employees were distributed throughout the district, and the men preferred to work in those shafts nearest at hand, though they were willing to go farther away if those were closed. Thus, when the price of copper was high and all the companies were able to operate, the more profitable mines were deprived of men, and hence were compelled to operate at less than capacity, with consequent higher costs.

For a number of years, the total sales of the five companies, which averaged about 150,000,000 pounds of copper per year, or about 6% of the world's output, had been made by the Hartwick Mining Company. The copper had been sold under two brands. That which came from the mines of the Hartwick Mining Company proper was sold under the Hartwick brand and commanded a price from $\frac{1}{8}$ to $\frac{1}{4}$ cent higher than the "B-M" copper, which was taken from the properties of the other four companies, although the analysis of the metal showed practically no difference in quality.

The demand for "Hartwick" copper had been built up over a

period of years through uninterrupted service. Many customers, especially those who required metal to manufacture fine drawn wire, were reluctant to change from the "Hartwick" brand. To secure sufficient copper to fill orders, the five companies mined about 3,000,000 tons of ore. This was hauled to the mills over the Putnam & Southern Railroad. Transportation in this way was becoming more and more uneconomical because of the increased quantities of ore which had to be carried over steep grades on devious routes.

In advancing the argument for consolidation, the president of the Hartwick Mining Company stressed the community of interest which existed. Many of the stockholders of each company owned stock in one or more of the other mines. The region was a competitor of the copper mining districts of South America and Arizona and all possible economies should be effected in order to compete with them. Consolidation permitted the following mining economies: the elimination of the 40-foot barriers between properties which contained valuable deposits of metal; the connection of drifts between mines in order to shorten underground hauls; a diminution of drilling through lean rock to reach richer ore; a reduction in the quantity of compressed air required to ventilate dead ends; the transfer from one mine to another of crews specialized in specific mining operations; and the avoidance of duplication of equipment used only at infrequent intervals.

In the mills and smelters the realizable economies were even greater. The combination of the ore from the different mines with a reduction in the amount of fluxing material to be purchased; the replacement of the 30,000-pound furnaces with those of 250,000-pound capacity, with a consequent saving in smelter cost of 0.70 cent per pound; a decrease in taxation by the abolition of four of the five corporations; the avoidance of competition between companies in securing additional mining territory; a curtailment of expenses connected with sales and administration: all these were possible if the consolidation was effected. It was estimated further that the installation of a new railroad would reduce the cost of handling ore from 18.5 cents to 11.25 cents per ton. When a labor shortage occurred, the available men could be drawn to the shafts where ore was mined at low cost in order to operate them at capacity, while the expenses for

the maintenance only of the higher cost shafts need be incurred.

Several stockholders of the Hartwick Mining Company objected to the consolidation on the ground that it provided for the inclusion of three relatively high-cost mines whose stockholders were to receive dividends from profits in the making of which they had had no part. The president pointed out, however, that these properties were situated between the others in such a way as to make it impossible to exclude them from the consolidation and effect the economies outlined. He stated that the market prices of the stocks of the two non-producers already had discounted their ability to earn only moderate profits, and hence that they formed a fair basis upon which to permit the stockholders to join the consolidation. He showed, furthermore, that the average life of the shafts of the high-cost mines was estimated at from three to four years longer than those of the other three companies. Thus, the producers could allow the others to participate in the consolidation to such an extent that the earnings of the latter would be larger than they could secure independently in order to obtain benefits for the consolidation as a whole.

The president proposed that consolidation be effected on the basis of the current market prices of the common stocks. He computed the savings at \$1,000,000 per year, and believed that slightly over \$2 per share on 2,000,000 shares could be earned with copper at 14½ cents. Table 21, below, shows the current market price of the shares of each of the companies at the time that the consolidation was proposed, together with the number of shares in the consolidated company for which one share in each of the old companies was to be exchangeable, and the

TABLE 21—CURRENT MARKET PRICES AND NUMBER OF SHARES IN
CONSOLIDATED COMPANY

Name of Company	Price per Share Outstanding	Exchange Ratio	Estimated Dividend Rate per Year per Share Outstanding
Abbott Copper Mines.....	\$60.00	2.68	\$5.36
Bright Mines, Incorporated.....	18.00	.80	1.60
Hartwick Mining Company.....	44.00	1.98	3.96
Noyes Copper Mining Company..	8.50	.38	.76
Richardson Mining Company....	35.00	1.56	3.12

estimated return per share on each of the shares already outstanding.

The estimated earnings at various sale prices for copper, independently, and under the consolidation are shown in Table 22, below.

TABLE 22—ESTIMATED EARNINGS AT VARIOUS SALE PRICES

Name of Company	Independently	Under Consolidation
14½-Cent Copper		
Abbott Copper Mines.....	1,073	1,254
Bright Mines, Incorporated.....	97	187
Hartwick Mining Company	2,357	2,808
Noyes Copper Mining Company.....	none	80
Richardson Mining Company.....	<u>151</u>	<u>351</u>
	3,678	4,680
15½-Cent Copper		
Abbott Copper Mines	1,300	1,565
Bright Mines, Incorporated.....	161	234
Hartwick Mining Company.....	3,060	3,504
Noyes Copper Mining Company.....	23	99
Richardson Mining Company.....	<u>297</u>	<u>438</u>
	4,841	5,840
16½-Cent Copper		
Abbott Copper Mines.....	1,526	1,876
Bright Mines, Incorporated.....	226	280
Hartwick Mining Company.....	3,761	4,200
Noyes Copper Mining Company.....	46	119
Richardson Mining Company.....	<u>444</u>	<u>525</u>
	6,003	7,000

In order to compensate the stockholders of the currently productive mines for a possible reduction in the customary dividend and to recognize the favorable cash position of the Richardson Mining Company, it was proposed to allow the Abbott Copper Mines \$5 per share in cash, the Hartwick Mining Company, \$1.25 per share in cash, and the Richardson Mining Company \$1 per share in cash.

Should the stockholders of the Bright Mines, Incorporated, the Noyes Copper Mining Company, and the Richardson Mining Company have been permitted to share in the consolidation?

18. COLE CANDY COMPANY—INTEGRATION IN ORDER TO CONTROL
THE QUALITY OF MATERIALS DURING A PERIOD
OF BUSINESS PROSPERITY

In 1919, the management of the Cole Candy Company discussed the advisability of erecting a plant for the manufacture of one of its principal materials. The company, which had been established for about 30 years, manufactured package chocolates of the highest grade, and quality was emphasized strongly as a selling appeal for the product. Although the product was distributed nationally, the company had discontinued national advertising in 1916. Prior to December, 1918, the company had obtained its chocolate coatings from an outside manufacturer, and through the continued cooperation of this producer, it had obtained materials of a uniformly high grade. In December, 1918, the management of the company which produced the chocolate coatings was changed. Because of the "sellers' market" and the difficulty in securing raw materials, the new management of the coating factory did not give as much attention to quality as formerly had been the policy. It was extremely difficult, at that time, moreover, to obtain chocolate coatings of the desired quality from any manufacturer. The manufacturers of this material were able to sell their output regardless of its quality.

There were two courses of action open to the management of the Cole Candy Company in March, 1919. It might endeavor to purchase chocolate coatings from other outside manufacturers, or it might erect a factory and manufacture the material. Different processes were involved in the manufacture of coatings from those used in the manufacture of candy. Skill was required in the purchase and in the roasting of the cocoa beans. Building costs were high at that time. It was estimated that the erection of the proposed factory involved an expenditure of \$600,000. This was a heavy capital investment for a company the annual sales of which amounted to \$5,000,000. The company was, however, in a sound financial position.

A year was likely to elapse before the factory could be completed and put into operation. It was probable that fully two years might expire before the plant could be operated on a profitable basis. The company did not expect to be able to secure

greater economy of production than independent manufacturers of chocolate coatings. Coatings could be purchased more cheaply from outside manufacturers. It was possible, moreover, for the Cole Candy Company to sell the entire output of its factory even though the quality of the material used in the manufacture of its candies was not so high as formerly. High profits were assured throughout the period of prosperity. In addition, if the company continued to purchase coatings from outside manufacturers until the period of prosperity was over and the volume of business became less, it then could dictate its own terms to the coating manufacturers in respect to quality.

On the other hand, there was a question as to the desirability of sacrificing a reputation for quality to temporary profits. A lower quality, even if maintained for only a short time, might result in the loss of many old customers. Customers who bought the company's product strictly on the basis of quality rather than price usually tended to be more permanent customers. If these customers were lost it might be difficult to regain them when better quality became possible. Through the ownership of a chocolate factory the company could maintain absolute control over the quality of its product. The increased cost might be compensated by the maintenance of good-will created with the old established clientele through the continued use of the best materials.

Should the Cole Candy Company have undertaken the erection of a factory for the manufacture of chocolate coatings in March, 1919.

19. BENTON CAB COMPANY—DETERMINATION OF PRICE POLICY ON ESTABLISHMENT OF NEW BUSINESS; SUBSEQUENT EXPANSION

In November, 1921, a small group of men decided to enter the taxicab business in a large city, which, they were convinced, offered a fertile field for development by a company which would provide modern service. A corporation known as the Benton Cab Company was formed, and each of the incorporators subscribed a small amount of capital. The company was to begin operations as soon as possible. It was desired to secure public interest and support from the outset, and those in charge had to develop a policy to attain this end.

The determination of the tariff was the first problem with which the management had to deal. Investigation which had been made, prior to the decision to enter the field, had disclosed that the companies then in operation were in a virtual combination to overcharge customers and maintain rates at a high level. Their cabs were for the most part nondescript, many of their drivers were rough and discourteous, and the service rendered was often undependable. Despite the high rates, profits were not large. Their shortcomings and the successful practices of large companies in other cities which operated fleets of uniform cabs economically and profitably on a low schedule of rates, pointed the way to the new company.

Arrangements were concluded with a cab-manufacturing company to supply 75 cars of the same model and design as those used by the large operating companies in other cities. The manufacturers, who, through an associated company, operated a large fleet of cabs, furnished the new company with the costs of operation of their subsidiary and of other operating companies to which they had rendered assistance. In addition, they made suggestions in regard to methods of organization, operation, and control which would produce the greatest possible economies.

The Benton Cab Company considered two factors in the establishment of its initial rate schedule—the rates which had been charged by the old companies, and the necessity of earning a reasonable margin of profit on the estimated cost of operation. The management was confident that the setting of rates at a level materially below that of other companies in the same city would serve a double purpose. It would enable the company to secure a large share of the existing taxicab patronage. In addition it would serve to build up an extensive new custom through the appeal of low rates to classes of people who up to this time had not used taxicabs because of their high cost. The demand for taxicab service was believed to be in large measure elastic, in that it could be stimulated through a reduction in rates.

Such a reduction, however, could not be made below the point at which the company would be assured of a reasonable margin of profit. It was necessary, therefore, to estimate the probable costs of operation. For this purpose the cost figures furnished by the cab manufacturers were used as a basis. Since these costs were incurred for cabs of exactly the same type as those which

the Benton Cab Company was to operate, allowance was made only for the estimated differences in the operating conditions, in the cost of supplies, in the volume of traffic transported, and in the influence of the seasonal factor. Shortly after the first of July, with the departure of many people from the cities, the use of taxicabs showed a sudden slump, usually of 25%, which continued until the end of August when, with equal suddenness, the volume of patronage resumed its former level. This decline was more severe than that usually experienced in other cities. In the winter months, weather conditions tended to increase costs of operation to a greater extent than elsewhere.

When weight had been given to all these elements, the estimated cost of operating the new cars was substantially above that incurred by companies in other cities, as the result of the greater cost of supplies, the smaller volume of traffic, and the wider seasonal variations. With a reasonable margin of profit added to the cost, the necessary tariff to patrons was 50 cents for the first mile, and 30 cents for each additional mile for one person, and 10 cents for each additional person, with no charge for the return mileage of the vacant cab. The prevailing rates of the old companies were 60 cents for the first mile and 40 cents for each additional mile for one person, and 20 cents for each extra passenger, with an added charge of 30% for return mileage. The differential between the two sets of rates was deemed a sufficient stimulus to demand, and the proposed tariff was put into effect.

The company sought to attract the public through this price inducement and through the fact that its cars were new, clean, and in good running order, and prompt and efficient service was guaranteed. All these appeals were stressed in the preliminary advertising in the newspapers. In order to establish the name of the company more firmly in the minds of the public, a distinctive design in contrasting colors was painted on the sides of each cab and prominently connected with the name. In this way each cab was made a moving advertisement of the company, and the attractiveness of the design and the well-kept appearance of the cars were effective in the attraction of favorable attention.

In order to merit public confidence and support still further, it was decided to secure a corps of drivers who would be distinctly above the average of their group. Each applicant was required to fill out an information blank which gave com-

plete details as to his education, habits, and previous employment. Before the manager engaged an applicant, he satisfied himself fully of the man's character and ability through personal interview and through a careful investigation of the references given. The new employee was on probation for two weeks, during which his personal conduct and his capacity as a driver were watched closely.

A daily wage of \$3 was paid. This was lower than the union rate of \$4, but it was guaranteed for seven days in the week and was supplemented by bonuses and prizes, through which it was expected that a man could earn \$1.50 per day extra. Thus, if a driver turned in fares which amounted to more than \$10 in a day, he was paid 20% of the excess over \$10. Each driver also received 3 cents for every trip he made with passengers. There was a weekly prize of \$1 for every man whose productive mileage was over 50% of his total. Three prizes of \$6, \$3, and \$2, respectively, were awarded weekly for the largest sums of money turned in by individuals during the week. A monthly prize of \$100 was given to the team of 10 drivers which accumulated the lowest number of demerits. Accidents, uncleanliness of person or cab, intoxication, incivility, dishonesty, and complaints from customers would be causes for the awarding of demerits. A monthly house organ was published in which were stressed cardinal points of conduct, such as courtesy, and in which were recorded especially praiseworthy acts of individual drivers. Detailed performance records were kept.

Through these incentives and through careful selection of applicants, the class of drivers desired was secured. This was expected to be a cumulative advantage, since patrons would be likely to use the taxicabs of this company exclusively if they were operated by careful, courteous, and honest drivers.

These, then, were the appeals by which fares were to be attracted. That they were successful was attested by the record of the company during the first year and a half of operation. It gained good-will and patronage rapidly. Other companies, in an attempt to meet the competition, placed better cars in service, adopted distinctive color combinations, and reduced rates. The Benton Cab Company, however, successfully retained its advantage, shown by its growing popularity. So great was the growth of demand for taxicab service that in the winter of 1922

and 1923 the company was able to give service to only one out of ten calls received. In other words, because of lack of cars, it was limited to serving only one-tenth of its potential patrons. In the spring of 1923 this condition led to a consideration of expansion.

There was a chance that it would be difficult to regain the potential custom which the company had been unable to serve and which as a result had been secured by other companies. This was not regarded as an important obstacle, however, since the reputation and good-will which the company had built up probably would be effective enough to attract former prospective patrons when the equipment with which to transport them became available. The possibility that the want which had been created was factitious and transitory likewise did not concern the management seriously. They were convinced that the new demand was permanent and would continue to increase as long as low rates and good service were offered. The management was confident, therefore, that the company could repeat the success of the outstanding taxicab companies in New York and Chicago.

Accordingly, it was decided to inaugurate a policy of expansion. Since the owners were unable to furnish sufficient additional capital to finance the step, it was necessary to interview friends and others who might be interested in an investment in the enterprise. On the basis of the exceedingly satisfactory earnings statement for the first year of operation, it was not difficult to raise sufficient money from the sale of new common stock to justify the placement of orders for 175 new cars. It was the expectation of the management that further increases in demand would necessitate the ordering of additional cars in periodical small lots, which could be financed out of accumulated earnings.

20. SOLOMON MERCURY MINES—RESUMPTION OF MINING OPERATIONS IN 1923

In January, 1923, the executives of the Solomon Mercury Mines, located in Texas, were considering whether or not to reopen the company's mines, which had been shut down since the last part of 1920.

The Solomon Mercury Mines had been one of the most profit-

able domestic quicksilver mining companies since its establishment in 1900. The average earnings during the first 20 years of its existence had been large enough to pay substantial dividends to stockholders until 1919, although, in a few unfavorable years, deficits had been shown. In 1919, the profits reported by the company were negligible. They were satisfactory in the first part of 1920, but at that time, it became necessary for the company to spend a substantial amount of money for repairs to a portion of the mine which had fallen in. This expenditure, together with heavy inventory losses resulting from the decline in the price of quicksilver during the last six months of that year, drew heavily upon the working capital of the company. In June, for instance, the company had received approximately \$100 per flask in contrast with \$35 in October. These prices were somewhat higher and lower respectively than the existing newspaper quotations for quicksilver. The large profits earned in 1916, 1917, and 1918 had been paid out to the stockholders in dividends. As a result, the company had no substantial surplus to cover the losses in 1920. Partly because of the lack of working capital, and partly because of the unfavorable market price of quicksilver, the mines were shut down in November, 1920, since prices had failed to show signs of stabilization.

TABLE 23—PRICES OF QUICKSILVER IN NEW YORK FROM 1911 TO 1920
PER FLASK OF 75 POUNDS

Month	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
January	\$42.00	\$43.00	\$40.00	\$38.75	\$ 51.60	\$231.50	\$ 81.04	\$126.77	\$105.50	\$0.19
February	48.69	45.50	40.00	39.00	59.38	283.50	120.90	119.59	89.84	84.32
March	52.00	44.60	39.70	38.60	73.13	213.75	113.30	131.53	71.56	92.61
April	49.40	42.05	39.25	38.00	71.50	140.375	115.64	121.87	72.94	122.19
May	45.00	41.55	39.50	37.90	77.20	95.10	105.98	118.97	83.12	89.50
June	43.75	41.40	40.00	38.00	95.63	73.00	84.34	122.50	93.25	90.15
July	48.00	42.50	39.88	36.75	95.50	79.80	107.80	126.63	104.68	90.33
August	48.25	42.38	40.00	38.00	92.90	74.75	115.00	125.65	107.08	83.81
September	46.85	43.00	39.13	37.48	89.50	75.50	112.21	127.81	102.52	75.00
October	45.20	42.03	38.56	33.75	94.70	70.40	100.94	127.18	86.35	67.20
November	45.00	42.03	38.95	50.30	108.13	70.25	102.50	124.91	90.74	58.42
December	44.25	40.50	39.50	51.25	135.00	80.00	115.00	117.70	98.27	49.58
Average	\$46.54	\$42.46	\$39.54	\$48.31	\$ 87.07	\$125.49	\$106.22	\$123.47	\$ 92.15	\$56.11

In previous years when low market prices prevailed, the company had continued operations under a curtailed schedule but deficits had been reported at such periods. Comparison of the prices of quicksilver and the income sheets and balance sheets published by the Solomon Mercury Mines shows the effect of market prices of quicksilver on the profits of the company. The correspondence between these published prices and the actual

prices received by the company was usually more close than that prevailing in 1920.

**INCOME STATEMENT OF THE SOLOMON MERCURY
MINES, 1911 TO 1919**

Particulars	1910	1918	1917	1916	1915
Net Sales of Quicksilver.....	\$448,080	\$1,049,115	\$687,935	\$586,876	\$324,793
Inventory of Quicksilver.....			119,438	160,000	79,080
Decrease or Increase in Supplies.....	(inc) 45,246	(dec) 34,118	(inc) 23,165	(inc) 29,003	(dec) 934
Interest.....			885	172	1,852
Gross Income.....	493,326	1,014,997	831,423	776,051	404,791
Total Expenses.....	*492,630	*880,964	501,042	440,106	277,567
Net Income.....	696	134,033	330,381	335,945	127,224
Federal Taxes.....			48,793	.....	.....
Depreciation and Depletion.....			162,410	.....	.....
Balance.....	†696	†134,033	119,178	335,945	127,224
Dividends.....		120,000	240,000	320,000	120,000
Surplus.....	696	14,033	120,822	15,945	7,224
			(deficit)		

Particulars	1914	1913	1912	1911
Net Sales of Quicksilver.....	\$178,724	\$246,115	\$331,740	\$260,291
Inventory of Quicksilver.....	58,560	41,779	76,569	55,182
Decrease or Increase in Supplies.....	(dec) 2,565	(inc) 443	(dec) 8,287	(dec) 2,318
Interest.....	1,570	2,106	1,966	3,210
Gross Income.....	236,289	290,443	301,988	316,365
Total Expenses.....	272,297	238,433	242,977	206,925
Net Income.....	(def) 36,008	52,010	59,011	109,440
Federal Taxes.....	.....	.....	.....	.....
Depreciation and Depletion.....	.....	.....	.....	.....
Balance.....	(def) 36,008	52,010	59,011	109,440
Dividends.....	8,000	32,000	96,000	120,000
Surplus.....	(def) 44,008	20,010	(def) 36,989	(def) 10,560

*Includes depreciation and depletion.

†Before federal taxes.

The Solomon Mercury Mines was fortunate in being able to close down the mines and keep them in repair at a comparatively small expense. The ore being worked at that time was located in the side of a hill, and any necessity for pumping water from the mines was obviated. The mines owned by most of the company's competitors were in underground shafts from 500 to 2,000 feet below the surface of the earth; hence, if any of these competitors desired to close down, they were forced to pump out the water continually during the period of shut-down.

SOLOMON MERCURY MINES—COMPARATIVE BALANCE SHEET, YEARS ENDING DECEMBER 31, 1911 TO 1920

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	
ASSETS:												
Real Estate and Machinery.....	\$ 5548,577	\$ 550,019	\$ 563,902	\$ 455,868	\$ 149,177	\$ 187,983	\$ 206,536	\$ 206,536	\$ 184,815	\$ 211,351	\$ 271,351	
Depreciation.....					24,174	203,368				160,000	120,000	
Mineral Deposits	2,704,886	2,738,822	2,781,503	2,944,560	..	..	..	..	..	..	..
Liberty Bonds.....				165,000	..	..	..	..	..	..	..
Materials and Sup- plies.....	72,606	261,106	244,788	187,202	{ 44,590	15,586	16,521	19,086	18,642	16,521	26,930	
Quicksilver.....	58,331	11,181	98,304	74,206	160,000	79,080	57,760	41,779	76,569	55,182	59,196	
Cash and Receivables	239,490	..	..	..	7,660	19,559	6,259	6,259	9,108	9,108	..	
Deficits.....					..	..	..	..	..	..	..
Total.....	\$3,635,061	\$3,648,231	\$3,664,399	\$3,783,568	\$603,601	\$505,476	\$471,891	\$515,681	\$495,670	\$532,659	\$532,659	
LIABILITIES:												
Capital Stock, 40,000 Shares (\$10 par value).....	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	
Profit and Loss.....		842	..	..	94,592	79,114	115,681	115,681	..	..	..
Accounts Payable.....	180,499	192,738	125,762	190,171	109,099	26,462	..	..	..	..	..
Reserve for Federal Taxes.....	..	..	..	79,585	48,793	..	..	..	..	..	..
Reserve for Mineral Deposits.....	3,054,652	3,054,651	3,059,052	3,144,604	..	..	..	..	..	..	..
Total.....	\$3,635,061	\$3,646,231	\$3,664,399	\$3,783,568	\$603,601	\$505,576	\$471,891	\$515,681	\$495,670	\$532,659	\$532,659	

TABLE 24—YEARLY DIVIDENDS, 1900 TO 1920, PER SHARE OF STOCK

Year	Dividends per Share	Year	Dividends per Share
1900.....	\$1.28	1911.....	\$2.40
1901.....	.96	1912.....	1.92
1902.....	1.60	1913.....	.64
1903.....	2.40	1914.....	.16
1904.....	1.92	1915.....	2.40
1905.....	1.60	1916.....	6.40
1906.....	1.28	1917.....	4.80
1907.....	1.28	1918.....	2.40
1908.....	1.92	1919.....	....
1909.....	1.92	1920.....	....
1910.....	2.56		

Previous to 1920, there were eight important uses for quicksilver.¹ The most important of these was for pharmaceutical use in making calomel and corrosive sublimate. Mercuric oxide and salts were used to a considerable extent in the manufacture of certain industrial chemicals. The next most important use for the quicksilver was for the manufacture of detonating caps for

TABLE 25—NUMBER OF FLASKS OF MERCURY PRODUCED BY THE SOLOMON MERCURY MINES

Year	Number of Flasks	Year	Number of Flasks
1915.....	5,000	1918.....	8,560
1916.....	8,660	1919.....	5,920
1917.....	8,800	1920.....	2,409

use in shells for firearms, and for blasting. Mercuric sulphide was used as a vermilion pigment. There was also some use for mercury in electrical apparatus, such as storage batteries, rectifiers for changing alternating to direct currents, and mercury vapor lamps used in photography and for purifying water. A smaller quantity of mercury was used in the manufacture of mercuric nitrate for use in the manufacture of felt and particularly felt hats. Another use for mercury was for amalgamating gold and silver in certain processes of gold and silver mining. There was

¹ Quicksilver in its natural state is found in cinnabar ore. The ore is crushed to fine pieces and heated in masonry furnaces. Quicksilver is thus driven from the ore, and is then condensed. It is placed in flasks containing 75 pounds and is ready for sale. Quicksilver flasks used in foreign countries contain 76 pounds of mercury.

a small use for mercury for such instruments as barometers and thermometers. During 1917 and 1918, the United States Government used considerable quantities of the red mercuric oxide for mixing with the last coat of paint to be placed on the hulls of fast cruisers. The formation of the poisonous bichloride of mercury prevented the growth of barnacles and vegetable matter on the ship's hulls. In 1917, the United States Geological Survey made the estimates shown in Table 26.

TABLE 26—UNITED STATES GEOLOGICAL SURVEY ESTIMATE OF
USES OF MERCURY

Uses	Flasks of 75 Pounds
Drugs and Chemicals.....	8,500
Fulminate	4,850
Vermillion Pigment	3,130
Oxide for Marine Paints.....	3,000
Electrical Apparatus	2,700
Felt Manufacture	1,700
Gold and Silver Amalgamating.....	850
Instruments	630
Miscellaneous, Including Boiler Compounds and Cos- metics	1,000
Total	26,360

The number of productive quicksilver mines in the United States has varied from time to time from approximately 20 to 60. The actual number of producers depended upon the existing price of mercury. The most extensive domestic quicksilver deposits worked were located in California. The second most important producing district was Terlingua county in Texas. The ore bodies in this section had not been worked as extensively as those in California, but it was asserted that the quicksilver reserves in this district were the largest known in the world. Quicksilver was mined to a lesser extent in Nevada, Oregon, and Arizona. Few of these domestic mines could produce at a profit when mercury was selling for less than \$75 a flask. The Solomon Mercury Mines were in a more favorable position; their costs varied from \$16 to \$75 a flask, according to the grade of ore being worked. Executives estimated that when mercury was selling for \$65 a flask the Solomon Mercury Mines could show a small profit although not large enough to provide for adequate development expenses.

TABLE 27—PRODUCTION, EXPORTS, AND IMPORTS OF QUICKSILVER IN THE UNITED STATES¹

Year	Production (b)				Exports				Imports	
	California (a)	Texas	Others	Total	Value (f)	Flasks	Metric Tons	Value	Pounds	Value
1908 (d)	16,969	2,832	346	685	\$ 903,391	2,995	110	\$ 124,960	15,113	\$ 8,215
1909	16,217	4,188	810	704	941,233	6,803	231	266,243	15,968	8,203
1910 (d)	18,536	3,382	500	763	1,054,991	1,923	65	91,077	667	381
1911 (b)	18,860	(e)	2,396	... ²	989,254	291	10	13,995	471,944	251,386
1912	20,600	2,700	1,847	855	1,067,742	310	14	13,360	82,706	39,919
1913	15,396	(k)	4,285	670	774,054	1,140	39	43,574	171,653	75,361
1914	11,485	(h)	5,083	536	811,832	1,446	49	70,753	685,665	300,000
1915	14,000	(h)	7,033	716	1,768,225	3,370	115	225,509	421,884	282,852
1916 (b)	21,045	(g)	8,504	383	1,018	3,768,119	8,880	302	670,475	424,396
1917 (b)	23,938	(g)	11,788	433	1,237	3,808,266	10,778	366	998,470	390,355
1918 (b)	22,664	(g)	9,495	724	1,119	4,066,064	3,098	105	338,620	503,925
1919 (b)	15,203	5,019	1,191	738	1,933,560	9,107	309	817,328	797,625	791,226
1920 (b)	9,366	3,601	103	455	1,041,156	1,553	53	129,993	1,072,650	971,510
1921 (b)	3,094	3,144	101	216	298,194	393	13	18,869	1,640,559	994,435
1922 (b)	4,405	2,692	278	217	368,348	291	10	15,910	1,535,025	757,842

¹ *The Mineral Industry*, Volume XXII, p. 613.

(a) Reported by the California State Mining Bureau, except as noted.

(b) Figures of the United States Geological Survey.

(d) Figures collected by *Mineral Industry*.

(f) Computed at average price at New York.

(e) With Nevada.

(k) Included in other states.

The richest and most important quicksilver mines that had been operated were in Spain. The Alamadan mine, situated about 140 miles southwest of Madrid, had a recovery of from 7% to 9% quicksilver per ton of ore treated. This recovery contrasted with an average figure of 0.38% in California and 1.42% in Texas for the year 1917. The average recovery of the ore from the Solomon Mercury Mines was approximately 0.50% per ton. Ninety-eight per cent of the quicksilver production in Spain was from the Alamadan mine. The cost of production in 1914 was approximately \$12 per flask. This mine has been owned by the Spanish Government since 1645. It was estimated by a German mining authority in 1922 that there were 40,000 metric tons of quicksilver to be recovered from the ore deposit which had been worked in this mine. After the middle of the nineteenth century the quicksilver from the Alamadan mine had been sold by Messrs. Rothschild in London. The contract between them and the Spanish Government expired December 31, 1921. The contract provided that the London agent should sell the greatest quantity possible in each year at an f.o.b. mine price of not less than seven pounds sterling per flask. The selling agent was to receive first, a commission $1\frac{1}{4}\%$ of the amount of sales; second, 6 shillings per flask for all quicksilver shipped from Spain to London; and third, 10% of the amount by which the sales price exceeded 8 pounds 2 shillings per flask. Since 1921, Spanish sales had been made by a council composed of members of the Spanish Government. It was stated that subsequent to that date, modern methods of mining quicksilver had been installed at the Alamadan mine. The richness of this Spanish ore gave the owners a great advantage over mercury mines in other countries.

Another important source of quicksilver was in the mines in northern Italy. The rich Idrian mine, formerly the possession of the Austrian Government, was in the territory ceded to Italy by the treaty of Versailles, and was owned by the Italian Government. The percentage of recovery at Idria and Monte Amiata, the next most important Italian mine, varied from 0.65% to 0.89%. In 1914, the cost of production at the Idrian mine was \$23 per flask; and at Monte Amiata, \$30 per flask. The known reserves of quicksilver at Idria amounted to not less than 20,000 metric tons.

Other important cinnabar deposits were located in Turkey, Japan, several South American republics, especially Peru, and in Mexico. The following table gives an approximation of the world's production of quicksilver.

TABLE 28—WORLD'S PRODUCTION OF QUICKSILVER¹ (IN METRIC TONS)

Year	Austria	China (a)	Hungary	Italy	Mexico	Spain	United States	Other Countries	Total
1913	819	2	89	1,004	166	1,245	670	28	4,023
1914	876	60	75	1,073	162	952	536	38	3,774
1915	760	211	68	985	94	1,222	716	25	4,081
1916	410	178	(c) 85	1,093	53	795	1,018	33	3,665
1917	648	261	95	1,071	33	827	1,237	23	4,195
1918	420	293	(c) 85	1,038	164	567	1,119	19	3,705
1919	(b)	80	(d)	845	119	1,226	738	14	3,022
1920	(b)	45	(d)	1,401	76	861	455	5	2,843
1921	(b)	98	(d)	1,071	46	(d)	216	7	...
1922	(b)	(d)	(d)	1,530	42	(c) 700	217	(d)	....

(a) Exports.

(b) Idris mines ceded to Italy after 1918.

(c) Estimated.

(d) Not yet available.

The depressed condition in the quicksilver market during 1921 and the low prices of quicksilver led domestic mining interests to petition the United States Congress for a higher tariff on quicksilver. The 1909 tariff bill had placed an import duty of 7 cents per pound on all imports of quicksilver with an equivalent duty on all mercuric compounds. This rate had been changed in the tariff bill of 1913 to a duty of 10% ad valorem with an equivalent duty on mercuric compounds. In 1921, it was estimated that if a specific duty of 50 cents a pound were placed on quicksilver, domestic mines could compete successfully with those in Spain and Italy. During the course of preparation of the Fordney-McCumber bill, the estimate was reduced to 35 cents per pound. This rate of duty was passed by the House of Representatives but was not accepted by the Senate, which proposed a duty of 15 cents a pound. A compromise was reached finally, and the new tariff law of 1921 provided for a specific duty of 25 cents per pound on quicksilver with an equivalent duty on mercuric compounds. Imports of quicksilver in 1921 were increased because of the prospect of the passage of this bill, and domestic stocks of quicksilver accumulated. The price steadied, however, during the first part of 1922 and advanced to \$72 per flask at the end of that year.

¹ *Mineral Industry*, Volume XXXI, p. 615.

This was, in part, the result of an agreement reached between the owner of the Idrian mine, the Italian Government, and the private owners of other Italian mines regarding the price at which they were willing to sell their product. The course of quicksilver prices in New York per flask of 75 pounds during 1921 and 1922 is shown in the following table:

TABLE 29—COURSE OF QUICKSILVER PRICES PER 75-POUND FLASK
DURING 1921 AND 1922

Month	1921	1922
January	\$48.44	\$49.96
February	49.55	48.29
March	46.80	50.20
April	45.42	52.28
May	47.00	54.88
June	46.85	55.11
July	44.95	55.00
August	45.03	57.59
September	42.66	67.64
October	39.84	72.56
November	39.80	71.52
December	49.21	72.30
Average	<u>\$45.46</u>	<u>\$58.94</u>

The development of the mercury boiler¹ was an important factor which might result in higher prices of quicksilver in 1923 and subsequent years. An inventor by the name of Emmet for 20 years had been experimenting with the possibility of using mercury vapor as a substitute for steam in power plants for generating electricity. The latest efforts in this experimentation had been carried on by him under the General Electric Company. An

¹ Briefly, the principle of operation was as follows: The mercury was heated in a mercury boiler to 667 degrees Fahrenheit, at which temperature the mercury boiled and was transformed into vapor. This vapor was then used at a pressure of 35 pounds per square inch to drive a specially constructed turbine which in turn drove an electric dynamo. The mercury vapor was then led to a condenser cooled by water. The vapor was transformed to a liquid state at a temperature of 405 degrees Fahrenheit. The water used for cooling the mercury vapor was transformed into steam and the steam used to drive another turbine which in turn generated electricity. The condensed mercury was then led back to the mercury boiler to be vaporized again. The development of the mercury boiler had been made possible by the improvement in the methods of arc and acetylene welding. The expense of leakage of mercury vapor and its poisonous character made it essential that all joints in the equipment be absolutely tight. The customary packed joints formerly used were not satisfactory. Acetylene welding had solved this difficulty, however.

experimental boiler had been installed by the Hartford Electric Light Company at Hartford, Connecticut. It was found that the mercury boiler when compared with a steam turbine generating plant, which used 200 pounds per square inch steam pressure, would produce, at 35 pounds per square inch mercury vapor pressure, about 52% greater electrical output per pound of fuel used. The experimental plant at Hartford used 7.3 pounds of mercury per kilowatt of electricity generated. The mercury turbine and the subsidiary steam turbine generated 1,800 and 2,200 kilowatts, respectively. Approximately, therefore, 28,000 pounds of mercury were necessary. It was expected that in the next plant built, the efficiency could be increased so that only between 5 and 6 pounds of mercury would be necessary per kilowatt generated. It was expected, furthermore, that within a short time, this could be improved to 4 pounds per kilowatt. Notwithstanding this increase in efficiency, it was evident that few mercury boilers could be put into use before the demand for mercury would be increased materially. If the use of this boiler became widespread, the production facilities of all the mines in the world were likely to be taxed severely.

There was little question concerning the economy that would result from the use of the mercury boiler, and this economy was great enough to more than justify the high cost of installation. A factor that might hinder the development of its use, however, was the possibility that the world's supply of quicksilver was not great enough to meet the possible demand. Another danger was that experimentation with other fluids as a substitute for steam was being carried on. If these fluids were cheaper, and resulted in economies similar to those of mercury vapor, the development of the mercury boiler would be unimportant.

There was also the question as to what policy would be followed by the Spanish Government in selling the product of the Alamadan mine. If the most modern mining methods were used there, it might be possible for the Spanish Government to export quicksilver to the United States and undersell domestic producers in spite of the high tariff of the Fordney-McCumber bill.

During the fall of 1922, the price of quicksilver advanced. The effects of the Fordney-McCumber tariff were beginning to appear. The experiments with the mercury boiler were giving promise of success. At this time, therefore, the stockholders of the Solo-

mon Mercury Mines subscribed in cash \$3.20 per share. This subscription gave the company adequate working capital and placed it in a position to reopen the mines as soon as it was desirable.

In January, 1923, the executives of the Solomon Mercury Mines estimated that production could be resumed at a slight profit. The profit, however, was not likely to be large enough to pay for the expenses of development which should be conducted. If prices declined during 1923, the mines might show an operating loss. The executives, however, expected higher prices during that year as a result of the new tariff conditions, and the possible development from the mercury boiler. From 18 months to 2 years were necessary to bring the mine into full production most economically. Immediate resumption of operations at full capacity would necessitate employment of unskilled workers at exorbitant wages. Full production could be resumed in 2 or 3 months' time if necessary, but the cost of following out this policy would be nearly twice as great as that of a gradual resumption over a period of 18 months.

Should the executives of the Solomon Mercury Mines have decided to resume operations in January, 1923?

C. LABOR RELATIONS IN PROSPERITY AND DEPRESSION

21. BELMOR STEEL COMPANY—INABILITY OF ONE CORPORATION TO MAINTAIN A LABOR POLICY DIFFERENT FROM THAT OF COMPETITORS

In 1918, the employees of the Belmor Steel Company requested the discontinuance of the 12-hour day and the adoption of an 8-hour day. A strike appeared imminent if their requests were not granted.

The Belmor Steel Company, an independent corporation, employed 4,800 men, the majority of whom were foreign-born. The company owned and operated iron mines, in addition to manufacturing structural shapes, plates, and rails. Its plants were located in an industrial district where there were various types of manufacturing companies and other steel corporations.

The labor policies of the Belmor Steel Company were like those of its competitors, which operated 24 hours daily and

employed two shifts of workmen. The 12-hour day was used in the steel industry because of the necessity for the continuous operation of plants. The men, however, did not work the entire 12 hours. Each man on a 12-hour shift usually had 2 or 3 hours of idle time during "heats." It was impossible to accelerate processes, since the time consumed by each was fixed by purely technical considerations and was independent of attendance. In each steel plant in the district approximately 20% of the employees worked 8 hours; the type of work which they did was similar in all companies and allowed little idle time. The Belmor Steel Company paid hourly and tonnage rates the same as those of other steel companies in its district.

The request for the 8-hour day came during an extremely active manufacturing period in which the company was making every effort to increase its production. The employees stated that three 8-hour shifts would increase production. There was a labor shortage, however, and the new plan required the employment of 2,400 additional men. It was doubtful if the local labor market could supply the number. Sixty per cent of the employees were skilled laborers; the same proportion held if the company increased its total number of employees.

If the 8-hour day were adopted, it was necessary to increase wages. The increase proposed by the Employees' Representation Committee was 25% of the old hourly or tonnage rate. For example, if a man were paid \$12 for 12 hours, the new plan provided that he receive \$10 for 8 hours. The Employees' Representation Committee stated that no increase in costs would result and that a lower unit cost might be expected from increased production. It was evident that if costs did increase, the profits of the company would decline. It was not possible to pass on to the consumer the increased cost, since prices were determined by competitive conditions.

It was decided by the management of the Belmor Steel Company to adopt the 8-hour day and the new scale of wage payment. For the first two months after the plan was installed, unit costs remained approximately the same. The company experienced difficulty in recruiting labor, and had to send employment agents into the field to recruit men. After this period, during which costs had remained uniform, production declined and unit costs in-

creased. The men became dissatisfied with the amount of their wages, and several of them tried to work 16 hours a day. When the company refused to allow them to do this, they sought employment in other industries or in steel companies in the district which continued to operate on the 12-hour basis. Labor turnover reached 30% per month; the employees who left were unskilled laborers. Eighteen months after the adoption of the new policy, the Belmor Steel Company returned to its previous policy of employing 4,800 men for two 12-hour shifts.

22. TREATY PRINTING COMPANY—INDEPENDENT STRIKE SETTLEMENT WHICH CAUSED RESIGNATION FROM MEMBERSHIP IN EMPLOYERS' ASSOCIATION

The Treaty Printing Company printed folders, catalogs, circulars, and letterheads. Total orders averaged \$500,000 per year. The company employed about 50 men, and was a member of the Printers' Association, which included all the principal printing companies in the city. In March, 1921, the association was engaged in a dispute with the Typographical Union about wages and hours, and a strike was imminent. The officers of the company discussed the advisability of avoiding a strike in their plant by effecting an individual settlement with the employees even though, as a result, resignation from the association be requested.

A few years previously, the Treaty Printing Company had joined the association in order to support it and to secure the benefits of membership. Through the efforts of the association, price-cutting among members was almost eliminated. A study of average operating costs was made and circulated among the members to prevent acceptance of orders below cost or without adequate profit. Useful trade information was distributed, and conditions were improved through the cooperation of printing companies. If one member was unable to fill emergency orders, it was arranged that the work be performed by another. The association negotiated all disputes between the unions and the printing companies concerning employees' wages and hours.

The Typographical Union was composed of linotype and monotype machine operators. On May 1, 1920, it made an agreement which determined wages and hours for the ensuing

year with the association. In September, 1920, the union requested a wage increase of \$3 per week and threatened to strike if this was not granted. Since a majority of printing plants were running at capacity and orders were plentiful, they were anxious to avoid a strike and agreed to the increase.

In March, 1921, the volume of orders decreased materially, and the association tried to reduce wages to the former level. The union opposed this action, and demanded an increase of 50% over that level and a 44-hour week as a basis for computing wages, instead of the existing 48-hour week basis. It again threatened a strike if the demands were not granted. The association rejected them, however, and requested members to enforce the \$3 reduction.

Although many of the companies employed both union and non-union men, all employees of the Treaty Printing Company were members of the various trade unions. If wages were reduced in accordance with the decision of the association, a complete shut-down of the plant was expected. It was desirable that the plant continue to operate, however, because of its contracts for several publications which were scheduled to appear regularly. Although provisions in contracts protected the company against legal liability for non-performance caused by strikes, the officers were anxious to maintain the good-will of customers. Competitors might be able to fill orders to a limited extent, since non-union workers were included among their employees, and a few union workers might not join in the strike.

On the other hand, the company was unable to estimate the probable duration of the strike or how favorable a wage agreement might be made by the association. If a separate settlement were made, labor costs might be higher than those of competitors. The company, furthermore, probably would be requested to resign from the association and thus would incur the disfavor of members, many of whom considered it a moral obligation to act in agreement with each other in disputes with the unions. Although severance of connection with the association allowed economy in expense, because dues were approximately \$200 per year, the benefits derived from it were sacrificed. Resignation was deemed an advantage, however, in so far as it might encourage the employees to adopt a more tractable attitude.

The officers decided it advisable to avert the strike, and instituted negotiations with the union for an independent wage agreement. The company subsequently complied with the expected request from the association that it resign from membership.

23. RANLEY LATHE WORKS—REDUCTION IN LABOR FORCE OF SKILLED WORKMEN IN 1921

A lathe factory, founded in 1884, was purchased in 1912, and renamed the Ranley Lathe Works. The company was noted for the high quality of the machine tools which it produced and sold to manufacturers through machinery wholesalers. Sales in 1919 amounted to \$800,000, the largest volume in the history of the company. The same rate of sales was maintained for the first eight months of 1920, but toward the end of the year an abrupt decline began. For this reason, in October, 1920, and for several months thereafter, the company was undecided whether or not to continue to manufacture at a normal rate.

The products of the Ranley Lathe Works included lathes, internal and rotary grinding machines, special machine tools, standard and special attachments. Seventy-five per cent of the output was manufactured in standard styles and sizes for stock, and the remaining 25% was produced to order. The majority of lathes produced were sold for \$850 cash without attachments, and for \$2,500 completely equipped. The indirect manufacturing cost was estimated by the cost accounting department at 150% of the direct labor and materials. After this, total manufacturing cost was determined, and the selling price was set so that the net profit aggregated 30%. This amount was necessary in order to enable the company to carry an adequate stock of finished machines; to allow for abrupt price changes, which were not unusual; and to provide for unforeseen contingencies.

During 1919 and the first half of 1920, \$125,000 was spent for enlargement and improvement of the plant. The old machinery was written down to its current value and \$40,000 was spent for additional equipment. The borrowing capacity of the company was so extended by this policy, that it was unable to purchase cutters for two Ingersoll milling machines recently installed at a cost of approximately \$11,000 each.

During 1920, in order to facilitate the movement of the finished products, obligations amounting to \$60,000 were incurred to guarantee customers against loss from price reductions. It was first apparent to the officers in April, 1920, that the amount already expended in permanent additions and betterments was excessive. In order to economize, no vacancies voluntarily made by employees thereafter were to be filled. The difficulty of securing employees with sufficient training at reasonable wages was an important factor in this decision. When the plant was operating at capacity 300 men were employed.

In December, 1920, of 150 men who remained with the company, many had been employed for many years and, consequently, were extremely loyal. During the year 1920, machines had been produced in lots of 40 or 50, in order to effect manufacturing economies. But in October, when an abrupt decline in orders indicated decreased demand, these lots were broken up, so that a few units could be completed. Thus in January, 1921, the book value of the inventory was \$239,000, but only enough units were salable to yield \$5,000; furthermore, \$50,000 was needed for the purchase of sufficient parts to complete the manufacture of only 100 machines.

In January, 1921, the banks perceived this condition of the balance sheet and informed the company that further loans would be curtailed. The general manager realized that available funds were inadequate to continue operations at the current rate and hence immediate economies were necessary. He did not consider the interests of the men, however, nor the fact that an indiscriminate lay-off might make enemies of older employees, who were among the best friends of the company. No attempt was made to ascertain whether or not the men who had been employed by the company for a long time were willing to remain for nominal wages so that they might retain their positions. In order, therefore, to secure a reduction in the pay-roll as promptly as possible, the manager ordered the superintendent to discharge three-quarters of the men in each department, and to pay those who remained only \$25 per week. Unemployment in the machine tool industry at that time was so extensive that no difficulty in the subsequent employment of workers was expected.

At this time, the number of executives was not reduced, with

the result that for the first three months of 1921 the overhead applicable to \$1 of direct labor and materials was between \$5 and \$6. In an effort to dispose of all the inventory possible, price reductions of 40% were made. Orders, however, were almost negligible.

In March, 1921, the banks refused further loans, and stated that a receivership, with an extensive reorganization, was preferable to the existing incompetent management. Forced by the lack of funds, the company discharged all except three men in the office and six men in the plant, who were retained to care for the equipment and inventories. Finally, in October, 1921, a receiver was appointed. He discovered that loss for the first nine months of the year amounted to \$210,000.

A new manager was appointed by the receiver, who attempted to place the company on a profitable basis. A plan of reorganization was adopted, whereby the outstanding common stock was excluded, and holders of preferred stock received only one share of the new common for 10 shares of old preferred. Receivers' certificates to the amount of \$30,000 were sold to the banks involved, with the understanding that when the contemplated reorganization was effected, the possessors of the certificates were to receive security equal to that given to those who subsequently invested in the company.

24. PARR AND SONS COMPANY—REFUSAL TO ACCEDE TO DEMANDS OF LABOR DURING A PERIOD OF INACTIVITY

The Parr and Sons Company, located in a town of 5,000 people on the outskirts of a metropolitan district, operated one of the largest independent printing presses in the United States. In common with others in the industry in 1916, it was forced to accept a 44-hour week in place of a 48-hour week¹ in order to induce its employees to return after a far-reaching strike in the printing trades. An agreement adopted at that time provided that the shorter week, as a basis for computing wages, should remain in effect until May 1, 1921. Just prior to the latter date,

¹The regular hours of the plant were 44 per week in either case. To work on a 48-hour week basis signified merely that a laborer must work 48 hours to secure the same wages that he could secure in 44 hours on a 44-hour week basis. Hence his normal weekly earnings on the former basis were 92% of those on the latter.

the printing companies in the district wished to reestablish the 48-hour week and organized a council to confer with the unions. The council, however, proved ineffective in overcoming the opposition of the unions, which refused to permit the men to accept the change. The manager of Parr and Sons Company, therefore, was confronted with the question of whether or not he should insist upon the longer base period.

The Parr and Sons Company accepted orders for books and job printing; text-books and bibles were two of the most important products. The press was operated as a "preferential shop." When new workmen were required, the unions were asked to provide suitable men. If, however, none were available from this source, the company was at liberty to employ non-union men. In practice, young printers hired by the company, who became sufficiently skilled, and acceptable non-union men were asked by the unions to become members after a short period. Thus, with few exceptions, the workmen in the plant were union men.

In return for the operation of this preferential shop, the company was placed on the "fair list" by the Allied Trades Council. The latter institution endeavored to induce state boards of education to use only those text-books printed in plants operated under union regulations.

Almost all the men in the employ of the Parr and Sons Company lived in the town in which the plant was located. Most of them had grown up there and had spent many years in the employ of the company. The labor turnover was relatively small and there was little transfer of employees between the Parr and Sons Company and the Sawyer Press, which was located in the same community, although the two companies were keen rivals.

Since the union representatives in the plant refused to negotiate on the subject of a longer week on which to compute wages, the manager of the Parr and Sons Company gave notice that he intended to adopt the 48-hour week and that, until the question was arbitrated in accordance with the contract with the unions, the difference in wages was to be placed in escrow in a local bank. The unions demanded that the existing basis be maintained until arbitration should be completed and ordered the men to walk out.

The workmen, on the other hand, because they bore the company no ill will and because of the scarcity of work, did not wish

to attempt to force the company to accede to their wishes. They feared, however, to disobey the instructions of the union. As provided in the 1916 agreement, a committee of arbitration, consisting of a representative of the men, a representative of the company, and a chairman selected by these two, was appointed. Even after a ruling by this body in favor of the company, the unions refused to sanction the return of the men and the strike continued.

Early in 1921, the manager had foreseen the dispute and by running overtime had operated the plant at about 50% above its normal capacity. Consequently, when the walkout occurred, there were almost no unfilled orders on the books of the company. The demand for printing, furthermore, had declined for several months and there was little prospect of a substantial increase in the immediate future.

The president favored the maintenance of a 44-hour week in order to continue operations, for he was confident that orders could be secured, if an agreement was reached while competitors still were unable to supply their customers. He was aware that living costs had declined far more than 8%, but he hesitated to force a fight with the unions after arbitration had failed to secure a settlement.

The manager, however, deemed the time favorable to force the representatives of the unions to accede to the demands of the company. Wages, which, without a strike, would have been paid in order to retain the good-will of the employees during an inactive period, were saved; and, as long as competitors did not reach an agreement with their workmen, customers would not be lost. He did not fear the loss of employees, because of their disinclination to live elsewhere and because he learned from several of the men with whom he talked that they wanted to return but were restrained by fear of the steps which the unions might take. From the tone of these men, he was confident that the company was in a position superior to that of its competitors, and that a settlement could be effected without delay. He believed, furthermore, that, if a satisfactory agreement were reached and operations were assured at lower costs, sufficient orders could be obtained to operate the plant at capacity.

Should Parr and Sons Company have adopted the 48-hour basis?

**25. FOSTER UTILITIES COMPANY—INCREASE OF WAGES IN
PERIOD OF PROSPERITY ONLY TO THE POINT WHICH COULD
BE MAINTAINED WHEN PROSPERITY CEASED**

For several years prior to 1920, the Foster Utilities Company had experienced difficulty in securing an adequate number of subordinate employees to maintain satisfactory service. Although wages of individual employees were increased periodically for the first six years of service, the average wages, including those paid to beginners, had been lower than those in other industries. The labor turnover, consequently, had been increasing, particularly among new employees; manufacturing companies, which were operating their factories at capacity, were willing to pay higher wages than the company to secure additional workers.

The index of the average full-time earnings of the entire operating force of the company was compared with the cost-of-living index constructed by the United States Bureau of Labor and the index of the weekly earnings of employees in manufacturing industries based on data compiled by the United States Bureau of Labor and the New York State Industrial Commission. The latter indexes are shown in the chart on page 366. The index of wages paid by the Foster Utilities Company had increased steadily during 1917, 1918, and 1919, but in January, 1920, still remained lower than the indexes of the cost of living and of wages paid in manufacturing industries. The indexes for January, 1919, and 1920, based on December, 1914, follow:

TABLE 30—INDEXES FOR JANUARY, 1919, AND JANUARY, 1920

Indexes	Jan., 1919	Jan., 1920
Index of wages paid in Foster Utilities Company....	154	187
Index of wages paid in manufacturing industries in the United States	190	215
Index of the cost of living	167	195

Two policies were open to the company in January, 1920: wages could be increased until they were comparable with those paid in manufacturing industries and decreased when business conditions declined; or wages could be increased only to the level which could be maintained in succeeding years.

If the second policy were adopted and the company attempted

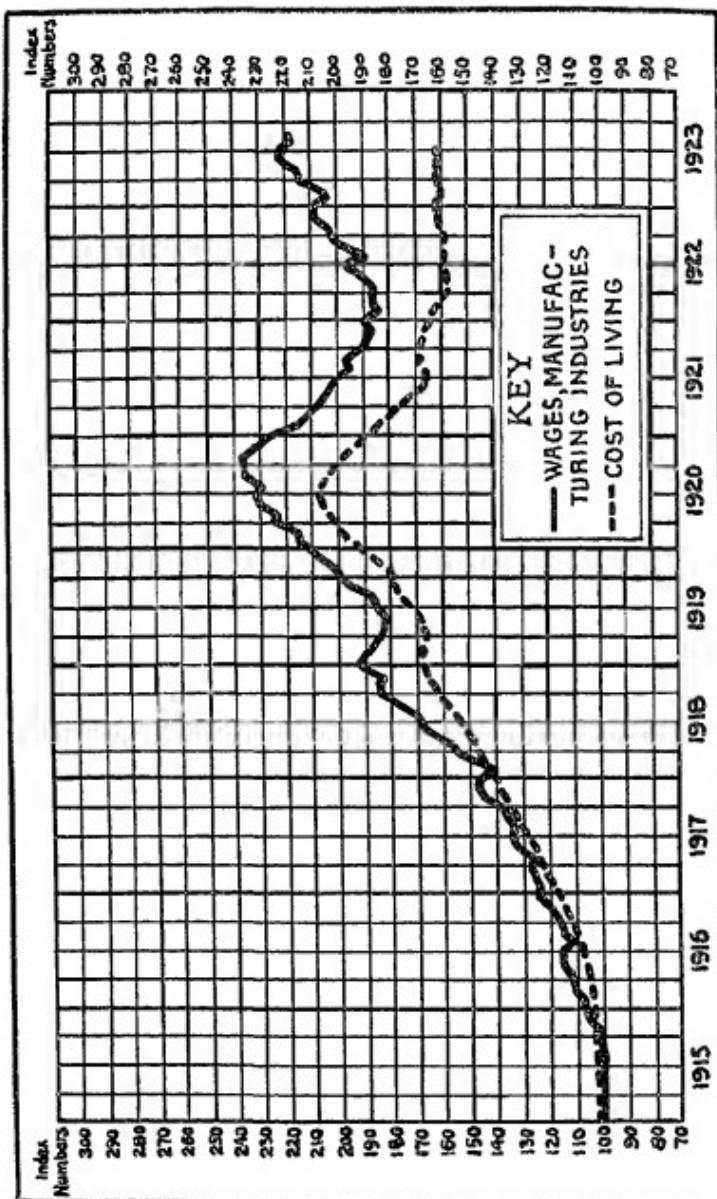


Figure 40. Wages of employees in manufacturing industries compared with the cost of living

to follow the long-time trend of wages rather than the cyclical fluctuations, the management proposed to base wage increases upon its forecast of probable changes in rates and of the probable trend of living costs during subsequent years. By a study of these factors the management could determine the level of wages which could be maintained safely.

The chief argument in favor of the former policy was that, if wages equaled those paid in manufacturing industries, the company could reduce labor turnover. Any such reduction was of advantage in the improvement of the service because training and experience of nearly a year were required before employees reached average proficiency. It was a recognized fact, moreover, that the quality of the service depended to an important extent upon whether or not the employees were satisfied.

The company foresaw, however, that sharp decreases in the wages paid by manufacturing industries were inevitable when the current prosperity declined. If wages were raised to the level of those in manufacturing industries, the subsequent necessary decrease when manufacturing wages declined was likely to have a harmful effect on the morale of the workers. Dissatisfaction among employees, which was reflected in impaired service, resulted in greater loss in a period of declining prices than in a period of increasing prosperity, because, under the former conditions, there was agitation by the public for reduced rates. If the service was poor at such a time, the agitation was increased correspondingly and public service commissions were influenced against the company. Even a slight reduction of rates caused a substantial decrease in revenues.

It was difficult, furthermore, to increase wages as rapidly or to as great an extent as in manufacturing companies. In the latter, prices could be raised overnight to absorb the increased labor costs, but this was not possible in the Foster Utilities Company. A proposed raise in rates, which was necessary in order to increase wages, had to be reviewed before a public service commission, and a thorough investigation and analysis made of all conditions which affected the costs of operation. It was, accordingly, inadvisable for the company to follow the trend of industrial wages, since it was impossible to secure rate increases as often or in as substantial amount as were necessary to absorb the higher labor expense. If the company's wages followed the changes of

industrial wages, although the labor turnover might be decreased and the service improved, the company was likely to have to take an operating loss.

It was possible that a favorable effect on the labor turnover might result from developing among the employees a realization of the advantages of keeping their positions in the company. If the management decided not to follow the changes of industrial wages, it could explain this policy to the employees and announce that, while no guarantee could be given that there were to be no decreases in wages in the future, no reductions were to be made as long as the existing level could be maintained. It could be pointed out that employment in the company was unaffected by changing business conditions, since the company expanded both in periods of prosperity and depression. Through steady employment, therefore, the employees were spared the anxiety of uncertainty and, moreover, earned more wages over a period of time than if they were employed in an industry in which relatively high wages were paid temporarily.

The employees, on leaving, surrendered the opportunity to save afforded by the stock purchase plan, under which employees of six months' standing were permitted to subscribe for stock of the company at a price substantially below the market and to pay for it through monthly deductions from their wages. Interest at 8% per annum compounded quarterly was allowed on these deductions. Subscriptions of employees who left the service were canceled unless the unpaid balances were paid in full before the termination of service. In case of cancellation, the employee received the total amount of his instalment payments, with interest thereon at 6% per annum compounded quarterly. If he returned to the service subsequently, his status with reference to the stock purchase plan was the same as that of a new employee.

Rights and benefits accumulated under the employees' benefit plan also were forfeited by employees who left the service. A benefit fund was maintained by the company for the payment of accident disability and accident death benefits, sickness benefits, and pensions for long service and for permanent disability. With the exception of the accident disability and accidental death benefits, payments were made contingent on the completion of specified lengths of service and were graduated according to the total length of service. Employees who left the company lost all

rights under the plan, and if they returned subsequently they had the status only of new employees.

The management decided in January, 1920, that it was not desirable to increase the wages of any employees beyond the level which probably could be maintained in subsequent years. This policy, however, was not extended to wages paid to beginners, since greater increases in these were necessary to attract applicants. The exception did not affect the general policy; initial wages were expected to be decreased when labor became more plentiful, but the wages of persons in service in 1920 were not to be raised to such a point that reductions might become necessary at a later time.

Increases in wages were made during 1920, but throughout the year, the index of wages paid to the company's employees was at all times over 20 points lower than that of wages of employees in manufacturing industries; in October, 1920, at the highest point in the manufacturing wage index, it was 28 points lower. The advantages of employment in the Foster Utilities Company were brought continually to the attention of the employees during this period. Although it was impossible to estimate to what extent the labor turnover was affected by this method, the management was of the opinion that otherwise a higher turnover might have been expected.

The company did not reduce the wages of any of its employees in 1921 or 1922. The only reductions were in the initial wages. The average wage increased during this period through the operation of the sliding scale which raised the employees' pay as their terms of service lengthened. In January, 1922, when the index of the wages of employees in manufacturing industries had declined from a peak of 236 in October, 1920, to 183, the index for the Foster Utilities Company had increased from 207 to 215. The cost-of-living index had declined at the time to 163, from a peak of 207 in June, 1920.

26. KIMBROUGH MACHINE COMPANY—ADOPTION OF PLAN OF EMPLOYEE PARTICIPATION IN MANAGEMENT IN PERIOD OF BUSINESS PROSPERITY

In June, 1918, the executive committee of the Kimbrough Machine Company considered the advisability of adopting a plan

of employees' representation. The company manufactured textile machinery, and during this period of maximum production the plant employed 700 men. The factory was located in a small industrial town where there were 15 to 20 machine shops, foundries, and other metal-working establishments and, consequently, active competition for labor. At that time workmen were employed and discharged at the discretion of the foremen. About 25% of the company's employees owned their own homes in the town, and were not likely to be attracted to other industrial centers by offers of higher wages. The remainder, however, was that type of labor which drifted from one factory to another; these men easily became dissatisfied with the amount of wages paid and with working conditions. Because of the large wages paid to labor in all factories and the abundance of work, the employees were generally inefficient. Demands for wage increases were frequent, but when granted they did not increase the efficiency or the production to any appreciable extent. In the early months of 1918, the company had a serious strike which was settled only by conceding many of the demands made by the employees. Production was curtailed for several weeks.

Many firms were accepting the idea of employee representation, and it was recommended generally as a partial remedy for existing labor difficulties. The management of the Kimbrough Machine Company decided that employee representation would have the effect of decreasing the friction that had previously developed between foremen and employees. When grievances were submitted directly to the management by committeemen representing the employees, they could be adjusted without the delay that often caused minor complaints to develop into issues involving the whole body of employees. The exponents of employee representation expected the plan to enable the management and the employees to understand mutually their respective problems and points of view. By becoming acquainted with the problems of management, the employees might take a greater interest in the general welfare of the company. It was advanced further that the conferences of the employee committeemen and the representatives of management might have a distinct educational value for the former. The management of the Kimbrough Machine Company was of the opinion that wage increases alone could not be relied upon to maintain efficiency. The cooperation

of the employees and a higher morale were needed if the company was to fill all the orders that it had on its books and make the greatest possible profits.

There was a possibility, however, that the men might be encouraged to make more demands after the establishment of this new plan for the adjustment of complaints. Representation strengthened the position of the so-called radical worker who was ever ready to assert unjust demands when the opportunity presented itself. In the period preceding 1918, employees had been particularly successful in their demands, and it was apprehended that the adoption of the proposed plan would cause the employees to assume that they had obtained another strategical victory.

The management decided, however, to adopt the plan of employee representation as recommended by the War Labor Board. Decisions relating to wages, working hours, quality of work, and general conditions of the employees were to be made by the management only after due consideration had been given to the claims of committeemen elected by the employees. It was provided that shop committees should be elected to meet with an equal number of representatives to be selected by the employers. Each department or section of the shop was entitled to one committeeman in the department. If in any department or section there were 50 employees in excess of an even 100, then an additional committeeman was to be elected. The endeavor was to have the committees of manageable size and to give proportional representation to as many occupational or other natural groups within the plant as possible.

The plan was continued through 1920 when it was allowed to lapse into disuse through lack of interest on the part of both the employees and the management. The employees' committee remained, but its functions became unimportant and little consideration was given to its recommendations. The management did not learn that the adoption of the plan solved any of its difficulties in the period of prosperity, high wages, and scarcity of labor. The treasurer of the company expressed the opinion that the employees had been unreasonable in their demands and as inefficient after the adoption of the plan as before. In 1921, the volume of sales of the company declined more than 50% from those in 1919. With the decline of sales, labor became

more plentiful and less exacting in its demands. Even in September, 1923, the plant was not operating at more than 60% of its capacity. This latter fact accounted for the loss of interest on the part of the management in employee representation. A majority of that class of labor which shifted from one place to another had been dropped from the pay-roll.

What characteristics peculiar to this organization contributed to the failure of the plan?

27. DAVIS TELEPHONE AND TELEGRAPH COMPANY—ESTABLISHMENT OF EMPLOYEE REPRESENTATION

For several years prior to 1919 the Davis Telephone and Telegraph Company had been interested in personnel work designed to promote the welfare and happiness of its employees. It had attempted constantly to make them more satisfied with their positions and to develop a spirit of cooperation which might be serviceable in reducing labor turnover and increasing production. The year 1919 was marked throughout all industries by unrest among workers which strained the relations between management and employees and had a harmful effect upon production. It became apparent to all thoughtful students of industrial relations that closer contacts between the workers and the management were necessary to improve and stabilize relations. The question arose, therefore, in the Davis Telephone and Telegraph Company as to the desirability and effectiveness of employee representation.

It was asserted that the chief advantage of employee representation was to provide a plan by which representatives of the employees could talk over various matters with the management and could discuss and settle complaints and grievances which arose frequently. Grievances might or might not be real, but whether actual or fancied they were demoralizing to those employees who harbored them. Whatever the company might do toward increasing the comfort of the workers and fostering more friendly relations between them and the management was of no avail and was open to misinterpretation if the workers had no one to whom to take their grievances. Employee representation provided a method by which these various troubles could be disclosed and either explained or removed in joint conferences.

The management realized that at first the conferences were

likely to be monopolized by matters of compensation and working conditions. It hoped, however, that opportunity might be afforded later to discuss the policies and plans of the company and the relations of both the employees and the company to the public. Opportunity also might be provided for the management to tell the employees about its responsibilities. Difficulties might be discussed and valuable suggestions secured. In this way the confidence of the employees in their own ability could be increased.

A further result to be gained by employee representation was the realization by the workers that they were an integral part of the organization, that the management had an interest in them, and that they were working with the management with a common purpose and toward a common objective. There were, accordingly, possibilities for greater attainments through cooperation and through the development of greater confidence of employees in the management.

Those who opposed the plan for joint conferences contended that the scheme would not work because the workers were not interested in information about the company and its affairs, but were concerned only with the amount of their wages and the length of their hours of work.

There was a possibility, furthermore, that the management might not be prepared for employee representation, or developed to the point where it appreciated fully the significance of such representation, or able to carry out its part of the program. As a result there might be evasions and delays in answering questions that arose in the joint conferences; in many cases a representative of the management was likely to shift responsibility to some other executive in regard to matters which he was unable to explain or discuss satisfactorily. Such occurrences were likely to impede and confuse the functioning of the plan and to make the employees lose confidence in the undertaking.

The management determined, however, that it was desirable to have the employees organized into an association which could present grievances and discuss various topics with representatives of the management. The initial proposal was that the company should develop and present a plan of organization to the employees. Two types of organization were considered, one of which was a simple scheme of independent office committees

with no opportunity for employees in different offices or departments to assemble and with no provision for appeal from decisions. The other plan permitted employees from different offices and departments and from various company subdivisions to come together to discuss matters of common interest, and provided for appeals from decisions along the line of company organization to the president.

After further deliberation, however, the management came to the conclusion that since the association was to belong to the employees, the management should not offer the company-framed type of organization, but ought to allow them to form their own plan. The management, of course, reserved the right to reject any part of the plan that seemed to be fundamentally unsound. It was suggested, therefore, through the regular organization channels, that the employees organize for collective dealing at each office, that they appoint representatives to negotiate with the managers of their respective offices, and that they draw up their own constitutions and submit them to the management for approval.

The result, as the management expected, was some degree of confusion and the submission of a great variety of schemes. The proposed constitutions ranged from crude to elaborate types and covered almost every conceivable form of organization. It was, of course, out of the question to approve this medley of plans as received, but however unsatisfactory the result of the initial attempt to organize the workers was, the first step had been taken by the employees themselves with complete freedom of action.

It was apparent that in the meantime there had been a general exchange of comments and views among the employees. Requests began to come in for permission for representatives from the various offices and company subdivisions to meet and consider types of employee organizations, with a view to selecting the type which seemed best fitted to their needs. The management was of the opinion that there were no convincing reasons for denying this privilege, and accordingly representatives were elected by the employees to attend a constitutional convention. The company turned over to this convention all the constitutions and proposed plans of organization which had been submitted by the employees, as well as drafts of plans which the management itself had prepared and copies of the constitutions and

forms of organizations then existing in several other companies. After much discussion, and with no interference by the management, a constitution embodying a form of organization which in general was the second and more liberal type originally considered by the management, was formed and presented for acceptance. After a few modifications which were agreed upon in joint discussions, the constitution was accepted by the management and ratified by the employees.

The purpose of the association was declared to be "to maintain a spirit of mutual cooperation and confidence by providing regular facilities for the exchange of views and suggestions between the employees and the management;" and "to supplement the right of each employee to deal directly with his superior officers by affording the employees collectively a voice in matters pertaining to working conditions, compensation, hours of labor, safety, efficiency, education, and other matters of mutual interest."

The organization of the association was parallel to the functional and territorial structure of the company organization. Basic unit bodies, called branches, consisting of 10 or more employees, were organized separately in the traffic and in the plant departments throughout the territory of the company. Each member of the association was affiliated with some departmental branch. Delegates from departmental branches formed a departmental district board in each district, and each division had a departmental division council composed of delegates from the district boards in that division. In addition there was a general office council composed of delegates from each of the general office departments at headquarters, and a general assembly composed of delegates from the general council and from all the division councils.

Each branch met once a month and after a business session, which was open only to members, a representative of the management gave a short talk intended not only to inform the employees but to stimulate their interest in their own particular work. Discussions intended to explain obscure points or to dispose of any new questions which might arise followed.

Matters to be taken up with the management were referred to the executive committee of the branch. This committee met every month with a management representative to engage in an infor-

mal, round-table discussion of company affairs; problems of both sides were talked over and suggestions were offered. The management representative had the right of decision on any proposals made by the employees, but appeal could be taken from his decisions to the district management head.

The district boards met once every three months, the division councils once every six months, and the general assembly once each year. Each of these bodies had its own executive committee, which dealt with the proper representative of the management and had the right of appeal to higher executives.

The question of wages, working conditions, and hours of work monopolized the entire time of the conferences with the management for nearly a year and left no chance for discussions of other subjects. Gradually, however, other types of questions began to be asked and the employees showed that they were interested in the various management policies of the company. After the first year questions and discussions fell under the following four general heads: The first group included wages and working conditions. Under the second heading were the subjects of tools, practices, methods, and results. Public relations were the subject of discussions in the third class. The final group was composed of miscellaneous subjects, such as employee representation, stock purchase plan, accident prevention, first-aid training, employees' benefit fund, and allied matters.

28. HARWIN MACHINE COMPANY—ESTABLISHMENT OF PERSONNEL DEPARTMENT IN PERIOD OF PROSPERITY

The Harwin Machine Company regularly manufactured cotton machinery, but during the World War gun mounts needed by the United States War Department were produced. In the period of maximum output about 900 men were employed. In June, 1918, the company had more orders than it could fill, and profits were high. There were several machine shops, iron foundries, and other metal-working factories in the town where the plant was located. These were operating at capacity, and active competition for labor existed. Because employment with high wages was abundant, the employees of the Harwin Machine Company became careless. The company was largely dependent upon the class of labor which constantly transferred from one factory to

another in order to obtain higher wages or less arduous labor.

The management of the Harwin Machine Company contemplated the establishment of a personnel department which was to select employees from applicants, and keep records of their subsequent performance and to supervise recreational activities. A house organ was to be published in the interest of the employees. This publication might promote friendly rivalry by showing exceptional output of any particular group of employees. Recreation for the workmen was to be provided through the formation of baseball teams. Competition between this factory and others might create a pride in the organizations of the company. The provisions for recreation were expected to promote good-will and decrease dissatisfaction. The employment of labor required specialized training, and a manager should be assigned who could devote his entire attention to it. Other factories used special inducements to secure and retain satisfied employees. It was necessary for the Harwin Machine Company to adopt similar methods, in order to meet the severe competition.

The employment of a personnel manager and his assistants, on the other hand, involved an expenditure of \$7,000 a year. The estimated expense of maintaining a house organ was \$5,000. Equipment for athletic teams and motion pictures was likely to cost \$5,000 annually. The expenditure of \$17,000 would have been regarded previously as exorbitant, but in 1918 sales aggregated about \$3,000,000 and profits were correspondingly high; therefore, the element of cost was not regarded as important. These advantages, however, might not increase the output of the employees. Wage increases had not been effective, and if the new plan was adopted, employees might become more interested in baseball and motion pictures than in record production.

It was decided, however, to engage an employment manager to direct the personnel department and its various activities. The department was continued until the latter part of 1920. Sales, at that time, had declined more than 50% from the high point reached in 1919. Because of the part-time operation of the plant, unit costs had advanced and the company was unable to sell its product at a profit. In September, 1923, the factory was operating at about 60% of its capacity. As profits declined in 1920, the company gradually curtailed the activities of the personnel department, and early in 1921 the office of personnel

manager was discontinued. The profits of the company had decreased, the desired spirit of cooperation had not been established, and the additional activities had taken the attention of the workmen away from maximum production. The following balance sheet shows the financial condition of the company in December, 1920.

HARWIN MACHINE COMPANY—BALANCE SHEET AS OF DECEMBER, 1920

ASSETS	LIABILITIES
Real Estate \$ 470,236.55	Capital Stocks . . . \$1,270,000.00
Machinery 734,881.69	Capital Stocks (no
Merchandise 1,388,798.34	par value) 635,000.00
Furniture, Fix- tures, etc. 40,430.45	Accounts Payable 682,693.58
Patterns and Drawings 140,313.41	Notes Payable 1,202,690.00
Notes 61,930.28	Reserve for Fed- eral Tax 11,342.37
Accounts Receiv- able 990,050.09	Advances on Con- tracts 143,275.05
Cash 123,720.86	Labor and Interest 23,897.59
Securities 128,270.00	Profit and Loss 164,125.91
Cash Advanced 2,223.77	
Interest and In- surance Prepaid 52,169.06	
Total \$4,133,024.50	Total \$4,133,024.50

The competition for labor diminished, and men could be employed more easily. The treasurer of the Harwin Machine Company stated that the company had derived no benefit from the expenditure made for the welfare of the employees during the period of prosperity.

29. PENNELL HOSIERY MILLS—INSTITUTION OF PROFIT-SHARING
PLAN TO SECURE COOPERATION OF EMPLOYEES

The Pennell Hosiery Mills were located in a town of about 8,000 inhabitants. There were no other textile manufacturing establishments in the town and, consequently, there was ordinarily little direct competition for labor. Approximately 700 workers were employed, most of whom were skilled; payment was made on a piece-rate basis. The mills had been in operation for 20 years, and cordial relations had been established

with the employees. The average length of service was about three years. About 80% of the workers were women.

In order to maintain the good-will of the employees, the company had granted bonuses of 10% of total wages for the years 1917 and 1918. Because of the increased earnings of the company in 1919, the bonus was increased to 15% of total wages. This increase in earnings had not resulted from greater interest on the part of the employees but from a larger volume of sales and an appreciation in inventory. The extra remuneration did not affect the quality of the work in the succeeding year. The bonus was paid in a lump sum at the end of the year and was spent and forgotten quickly by the average employee.

In January, 1920, during a period of maximum production, the management decided to discontinue the bonus and to adopt a profit-sharing plan. The output of the mills was being disposed of easily, and profits were satisfactory. A permanent place of employment was not as highly valued as in a less prosperous period. Because of the high wages and abundance of work in the nearby towns, the employees had become lax and careless. The profit-sharing plan was instituted in order to interest the employees permanently, and as a group, in the welfare and prosperity of the company, and, consequently, to encourage care and economy in the use of materials and to develop a sense of pride in the manufacture of a satisfactory product.

The following agreement was made with the employees. As soon as possible after December 31 of each year, until the agreement should be abrogated, the net profits of the company for the calendar year were to be ascertained. One half of this sum was to be placed to the credit of the body of employees by proper entries upon the books of the company; the other half was to remain the separate property of the management. The amount credited to the body of employees was divided among individuals according to the ratio of the individual wage or salary for the year to the total pay-roll. Fifty per cent of this individual profit was paid in cash, and a certificate for the remainder was issued.

The amount represented by the certificate remained with the management; the employees were to receive interest annually upon it at the rate of 6%.

Employees who entered the service of the company after Janu-

ary, 1920, were not to commence to share in profits until they had remained with the company for three years. When an employee who had remained with the company for five years or more retired, he could redeem the certificates, with interest, in one year after notice of retirement had been given, the valuation to be that of the date of the payment. An employee who left voluntarily before the expiration of five years' service agreed to permit the amount for which he held certificates to remain in the business until the expiration of five years from the date of his employment. The management reserved the right to pay the whole or part of any certificate at any time.

If a loss were sustained in any year, it was to be borne equally by the management and the employees. If the funds credited to the employees were insufficient to meet their obligations, the amount was to be advanced by the management. The sum so advanced was to be charged against future credits to the employees. Losses were to be shared by individual employees in the same proportion as profits.

The agreement provided that at the end of each calendar year the regular accountant of the management should ascertain the amount of total net profits and should state to each employee the amount of his share. This statement was to be final unless a majority of all the employees, by written ballot, voted to have the accounts examined for the purpose of determining their correctness. The expense of such an examination was to be borne by the employees.

The decision of the company's management was to be final in controversies arising with respect to the promptness, efficiency, and performance of duty of any employee. The title to all property remained in the management, and the agreement provided that the enterprise should be conducted, managed, and controlled solely by them without reference on the part of the employees. The management reserved the right to increase or decrease the number of active employees. When any employee was discharged, full settlement for the certificate was to be made at once and in cash.

If at any time the interests of the employees exceeded a fair valuation of the property of the management, a corporation was to be organized upon the initiative of the proprietors or a majority of the employees. All the real and personal property

of the old company and the right to use its name were to be transferred to this corporation. The capital stock was to be equal to the value of all property rights and interests that had been transferred to the corporation by the employees and proprietors. The par value of the stock was to be \$100 per share. The proprietors and employees were to receive, and accept in full payment for their interests, shares of capital stock of the corporation at par value.

It was provided that the agreement might be abrogated and this plan of profit-sharing abandoned by the management at any time after the expiration of two years, if, in their opinion, the purposes for which it had been established had not been realized. In this event, the certificates of employee ownership were to be redeemed in full in cash. No mention was made of possible abrogation of the plan on the part of the employees in the event of dissatisfaction on their part.

After the plan had been in operation for three years, the expected results had not been achieved. The cooperation of only about 50% of the employees was secured. While none of the workers openly opposed the plan, half of them were totally indifferent to its advantages. The possibility of eventual ownership was too far removed. The profits received by the individuals depended not only upon their own productiveness, but upon the productiveness of all other employees and upon the financial success of the company as a whole. The stimulus provided was too indirect; the worker was likely to assume the attitude that individual slackness did not affect net profits to an appreciable degree.

The average amount received by the individual employees, including the higher factory executives and foremen, as bonuses in 1917, 1918, and 1919, were approximately \$120, \$140, and \$190, respectively. In 1920, the average amount received by the individual employee under the profit-sharing plan was \$200. In 1921, there were no profits, because the company had not reduced its wages from the high point reached in 1920, whereas most textile mills had effected a 22½% reduction. If the Pennell Hosiery Mills had done this, the net profits for the year 1921 would have been \$200,000, and under the profit-sharing plan only \$100,000 would have been paid to the body of employees, or approximately \$142 to each individual.

**30. THRASHER COTTON MILLS COMPANY—SALE OF COMMON STOCK
TO EMPLOYEES UPON INSTALMENT PLAN**

The Thrasher Cotton Mills Company, which operated three mills for the production of cotton cloth, had 10,000 employees. In the spring of 1923, a committee of employees requested that the company allow workers to purchase common stock under a plan of instalment payments. The market price of the stock was about 96. The dividend rate was 6%, and dividends of at least 6% had been paid continuously after 1890. The company had an opportunity to secure a block of 5,000 shares at 91 from an associated company in case the officers decided that the sale of this stock at cost to the employees was advisable.

It was the policy of the company to comply with reasonable requests from employees whenever possible. Approximately 750 employees already had purchased the company's stock on the open market. Other employees desired to invest in the stock because they were familiar with the company and had confidence in its ability to pay dividends. They did not have sufficient funds, however, to make immediate payment, and sought the adoption of the instalment-payment plan because it allowed them gradually to acquire ownership of the stock.

The interest of employees in the company's welfare was stimulated by ownership of stock. Although not every worker was expected to become a stockholder, those who purchased were likely to be the leaders and the most influential among their fellows. As stockholders they would realize that whatever was of benefit to the company benefited them. It was advantageous, furthermore, for the company to stimulate among the employees a pride of possession and a sense of importance as part owners of the corporation. The Thrasher Cotton Mills could expect better cooperation in securing economy of operation and in readjusting wages. A reduction in labor turnover also was possible, because workers who owned shares were not likely to seek employment with other companies.

The officers believed that the results of the sale of common stock to employees by other important companies, such as the United States Steel Corporation and the American Woolen Company, were satisfactory. The interest of employees in the welfare of those companies was said to have been strengthened by ownership.

The plan provided a simple method for sharing profits with employees. Other plans for profit sharing had been rejected because they were complex and could not be understood readily by workers. It also seemed that when bonuses and premiums were paid under various methods for sharing profits, workers often received the impression that the payments were available because wages had been maintained at a low level. Employees generally preferred high wages to gratuities. The semblance of giving the latter was avoided by the sale of common stock because when employees became part owners of the company, they received the same profit as other owners.

If the stock bought by employees was held as an investment and not sold when the price declined slightly, reduction in the fluctuation of the stock was possible. A wider market for the stock was provided also, because employees were likely to purchase additional shares subsequently on the open market. On the other hand, if employees found it necessary to sell on the market at a price below 91, the discontent and resentment caused by such losses might defeat the purpose of the plan. It was suggested to the officers that the interests of the employees were not served by investments of savings in the company which furnished their livelihood. They were more in need of income from savings when the affairs of the company were not prosperous and when employment was unsteady. At such times, however, the market price of the stock was likely to be low, and dividends were not assured.

It was probable that comparatively few workers could take advantage of the plan, and hence the advantages to be derived by the company were limited. A frequent disadvantage of the sale of common stock at less than the market price was that employees might sell their rights to subscribe or dispose of the stock to individuals not employed by the company. A few companies avoided this difficulty by paying a special bonus to those who held the stock for a specified period of years. The officers of the Thrasher Cotton Mills Company believed that instalment payments extending for a year or more prevented immediate disposal of stock. After an employee completed payments and became an outright owner of the shares, he was justified in selling them when he desired. If restrictions on the right

to sell were imposed, the discrimination removed employees from the class of common stockholders.

Another plan was suggested which eliminated risk of loss to employees from a decline in price by creating a special class of stock. This stock was not negotiable and it paid preferred dividends. A fixed minimum rate could be established which equaled the dividend rate on common stock with a provision that it be raised to correspond with increases in the common stock rate. Thus employees were assured of sharing profits equally with common stockholders without the risk of a serious decline in price. They were not given voting power and were unable to sell the stock except to the company and at the price paid. An advantage for the company was that the desired amount of stock could be issued and sold at any figure regardless of the market price for common stock.

This suggestion was not adopted because it eliminated the advantages of ownership of common stock by employees. If another form of stock were sold, interest of workers was not stimulated by ownership of stock, the dividends on which were assured. Unless risks were shared by employees, there was no incentive for them to cooperate with the management. The risk involved could be explained fully before agreements to purchase were made and no one was to be urged to buy the stock.

The officers recognized that employees' savings should not be subjected to risks in the company which supplied their chief means of livelihood. Since the probable subscription of each worker was only two or three shares, however, the investment in many cases would not constitute his entire savings. In other instances, the amounts paid for stock were not likely to be saved except under the instalment plan.

The officers decided to purchase the block of 5,000 shares for sale to workers on instalment payments. Employees could agree to purchase from one to five shares at \$91 per share. If subscriptions to more than 5,000 shares were received, the company reserved the right to reduce the number of shares allotted in order to allow at least one share to each applicant. It was specified that \$5 per share be paid within five weeks after date of announcement of the plan, with additional payments to be deducted from pay at the optional rate of either \$1 or \$2 per share each week. The company was owner of this stock until full payment

was received, but dividends declared were credited to the account of the purchaser. Interest at the rate of 5% per year on unpaid balances was charged quarterly. Employees were permitted to cancel purchase agreements at any time, and to recover the total amounts paid, less dividends. There were no transfer rights until the stock was fully paid. The following paragraph was contained in the announcement of the plan:

The company is now paying 6% dividends, i. e. \$6 per year on each share of stock, but, of course, cannot guarantee the future rate or the future market price of the stock. All employees who become stockholders under this plan will, after receiving their stock, thus be on exactly the same basis as any other stockholders, with the same rights and benefits and the same risks.

In the five weeks which intervened between the announcement of the sale and the last day on which applications were accepted, the market price of the stock declined from \$97 to \$90. Approximately 2,375 shares were purchased by 695 employees. The officers realized that the offer was made at an unfavorable time. Those who subscribed under the plan, however, did not cancel their commitments. The remaining stock was held in the treasury until employees should request another opportunity to purchase stock on instalment payments.

31. HUDSON TELEPHONE COMPANY—SALE OF STOCK TO EMPLOYEES

In connection with the personnel work of the Hudson Telephone Company during the latter part of 1914, the advisability of selling stock to employees was presented for consideration. The company controlled a number of operating telephone companies throughout the United States, and it was deemed necessary that any offer of stock be extended on the same terms to employees of all the companies. The public utility laws of the state in which the parent company was incorporated and had its headquarters, permitted stock issues to employees but not to employees of subsidiaries. The employees of the parent company constituted only a small minority of those of the whole system. If the company decided to sell stock to employees, therefore, it was necessary to buy in the open market the number of shares required for all purchases by employees of subsidiaries. Stock so purchased could be deposited with a trustee until all payments were made.

It was advisable to offer the stock several points below the market price in order to provide an inducement to the employees to subscribe and to protect them from fluctuations in the market price. In addition to this cost, a possible disadvantage was the chance for speculation. The company desired that the stock be held as an investment by those employees who purchased it and not used as a means of making a few dollars by resale in the open market. Owners of stock, however, could not be prevented from selling it.

It was not possible to institute a plan of profit sharing as a means of interesting employees in the success of the company, since in a public utility, any surplus that remained after the payment of a satisfactory rate of return upon the capital invested was required for reinvestment to protect the service and to provide the margin of surplus necessary for further capital issues.

By the purchase of stock, the employees became part owners, and as such might be expected to develop an active interest in the organization and conduct of the business, which would result in an improvement of the service.

The establishment of such a plan, furthermore, might cause a reduction of the labor turnover, since it provided an additional incentive for employees to remain with the company. Because of the training and experience necessary before an employee actually became productive, there was a direct loss when one resigned. A stock plan provided an additional attraction to applicants for positions. An increase in the number of applicants raised the standard of the personnel, since it afforded a wider range of selection.

The sale of stock to employees was of direct advantage to them, since it provided an incentive to save and a profitable means of doing so. They were given the opportunity to invest in the stock of a company with steady earnings, at a price below the market value. In 1914, the company had an unbroken dividend record of 31 years and its stock had a reputation as a stable and sound investment. The deduction from the pay of an employee of a nominal amount monthly for each share of stock subscribed for provided an easy way to save; he came to look upon his pay as being that much less and governed his expenses accordingly.

The company decided to sell stock to its employees. Under the plan which was adopted subscriptions were accepted up to

January 30, 1915, from employees who had been with the company two years or more. The market price during February, 1915, varied from \$116 to \$121; the price to employees under this offer was fixed at \$110, the lowest market price for the preceding year. The management considered this price sufficiently below the market value to remove the possibility of any adverse effect upon the plan from minor fluctuations in the stock market. The price was close enough to the market value, however, to reduce the speculative appeal which resulted when there was a prospect of a large capital gain. There was no guarantee against the possibility of a second offer at a higher or lower price. The company expected to adjust the price in any subsequent offer according to the price at which the stock was selling in the open market. Each employee was allowed to subscribe for stock up to a maximum of one share for each \$300 of his annual wages, provided this number did not exceed 10 shares.

Payment for the stock was made, beginning in March, 1915, by instalments of \$2 per share per month, but the unpaid balance could be paid in full after March 1, 1917. Dividends on the stock were credited as payments. Interest was charged on unpaid balances at the rate of 4% per annum and was added to the unpaid balance at the end of each quarter. If an employee desired to withdraw from his purchase agreement, he was paid the total amount withheld from his wages, with interest at 4% per annum compounded quarterly. The stock was purchased by the company and was held by three trustees appointed by the board of directors until it was fully paid for by the employees. It then was transferred to the purchaser, who held it without restrictions and with all the rights of other stockholders.

The first offering was received with approval by the employees and many took advantage of it. So many requests for a second offering were made by employees whose term of employment had been too short to allow them to participate in the first sale, or who had been prevented by other reasons, that the company deemed it desirable to provide a second opportunity for the employees to subscribe for stock. Consequently, a second offer was made in March, 1916, on the same terms except for the price, which was fixed at \$118 per share. The market price at this time was from \$127 to \$130.

A third offering was made to employees in December, 1919, at

\$100, which was about the market price of the stock at that time. The plan was amended to permit employees of one year or more of service to purchase shares in proportion to their wages, with a maximum of 20 shares to one person. The instalments were increased to \$3 per month.

In April, 1921, an amendment to the corporation law of the state was made which allowed corporations to issue stock not only to their own employees but also to the employees of their subsidiaries, if permission was granted by their stockholders. The Hudson Telephone Company requested the employees of subsidiaries who were paying for shares to accept new stock issued in their names instead of the stock held by the trustees. This request, which was granted by almost all the purchasers, was of advantage to the company, because the market price had increased after the third offering was made. The company, therefore, could sell the stock on the market at a higher price than it had paid. In addition to this premium, the company also secured more stockholders and more capital with which to pay for plant extensions.

In May, 1921, the plan was changed to allow employees of six months or more service to subscribe for stock at any time at a price fixed by the company. This price, however, could not be less than par. No employee could subscribe for more than 50 shares in one year or for more than one share for each \$300 of his annual pay. The price during May, 1921, and until the end of November of that year was \$100 per share. The market price was about \$108 in May and rose to \$118 in November. Payments were made at the rate of \$3 per share per month, and interest at the rate of 8% compounded quarterly (later reduced to 7%) was credited to the employees' accounts on all deductions from their wages. At any time after six months from the date of the initial deduction, payment in full for all or part of the stock subscribed could be made. An employee could withdraw his subscription at any time and receive the total amount deducted from his pay, with interest at 6% per annum compounded quarterly.

The price of stock offered to employees was raised in December, 1921, to \$105 and continued at this price until March, 1922, when it was increased again to \$110. In November, 1921, the market price was about \$118 and rose to over \$120 in March, 1922. In October, 1922, the price to employees was increased

a third time to \$115 per share. The market price for several months previous had averaged about \$123. On February 1, 1924, the price was raised to \$118 per share; the market price at this time was about \$128.

In May, 1922, the provision under which employees could complete payments on their stock six months from the initial deduction was revoked. This provision had permitted speculation on the part of the employees, since it enabled them to secure their stock in a comparatively short period of time, to sell it on the open market, and to subscribe again for more stock. Notwithstanding this change, the company was convinced that the employees of the system realized fully the advantages that were offered to them by the stock purchase plan. In March, 1923, approximately one-sixth of the employees were stockholders and nearly one-third were paying for stock purchased on the monthly payment plan.

32. ASSOCIATED STEEL COMPANY—ADOPTION OF A PLAN TO MAKE POSSIBLE SUBSTANTIAL STOCK OWNERSHIP AMONG CHIEF EXECUTIVES

In 1917 and 1918 the Mercury Oil Company, important producers and refiners of petroleum products, had exceptionally large earnings. They were in excess of the amount that was needed for reinvestment in producing properties or refining facilities. However, the high taxes that were in effect during that period made the executives hesitate to distribute them to stockholders in the form of cash dividends. They decided, therefore, to invest these earnings in the stock of other industrial corporations which they deemed had both the elements of a safe security and substantial speculative possibilities. Among the investments made was the purchase of 400,000 shares of stock in the Associated Steel Company. There were about 1,600,000 shares outstanding of no par value. Control of the common stock was held by other interests. This steel company was a consolidation of 10 companies engaged in the production of steel parts to be used in the manufacture of automobiles. Most of the individual companies had been successful. They had been consolidated in the belief that economies could be secured in production, distribution, and executive management. The Associated Steel Company during its few years of

existence had justified fully these expectations and had become an important unit in the steel industry, specializing in automobile products.

From 1918 to 1920 the earnings of the Associated Steel Company were substantial enough to enhance materially the value of the common stock. In 1921, however, the company underwent serious losses as the result of unduly large inventories and raw material commitments. The interests controlling the stock of the Associated Steel Company became involved financially and were unable to continue to hold the stock in the face of its current depreciated value. There appeared to be no way in which these interests could liquidate their holdings on the open market without substantially depressing the price. The executives of the Mercury Oil Company were of the opinion that if the stock should be so liquidated and if as a result full knowledge of the serious financial difficulties of the Associated Steel Company were made public, the attendant results might bring about receivership. In order to protect the investment that it already had made in the Associated Steel Company, the executives of the Mercury Oil Company decided that it was wise to purchase enough additional common stock to control the Associated Steel Company. It was necessary to purchase 200,000 shares for this purpose. The disadvantage of so doing, however, was that the purchase necessitated the investment of a large proportion of the surplus funds of the Mercury Oil Company in an outside corporation whose business was totally unrelated to oil production and refining. The necessity for protecting the investment already made, however, outweighed this factor and the purchase was made. Title to all the stock of the Associated Steel Company already owned and at that time purchased by the Mercury Oil Company was given to the Mercury Investment Corporation which was established solely for the purpose of holding the stock of the Associated Steel Company.

During 1921 and 1922, the new management of the Associated Steel Company, which had been appointed by those in control of the Mercury Oil Company, completely reformed the method of administration of the Associated Steel Company. Among the former administrative methods that the new management of the Associated Steel Company desired to improve was that of a special reward to chief executives in addition to their salaries. This previously had been made by the distribution of a bonus from year

to year the amount of which depended upon the profits of the company. After deducting from net earnings 7% upon the capital employed, 10% of the total net earnings had been distributed in the form of a bonus to all employees of the company. Five per cent was distributed to wage earners and junior executives, and 5% to the 28 senior executives, including directors in managerial positions. The bonus was payable in the form of Associated Steel Company common stock. In addition to this bonus plan, there was a savings plan in effect for wage earners of the company whereby for every dollar saved by the employee and invested in the common stock of the Associated Steel Company the Associated Steel Company added 50 cents to such employee's investment. The following number of shares of stock had been distributed to all deserving employees of the company since the plan was inaugurated in 1918:

	7% Preferred		Common			
1919	5,676		1918	20,917	1920	9,558
1920	2,536		1919	17,173	1922	13,718

The new management was of the opinion that the amount of bonus distributed to the chief executives was not large enough in relation to their salaries to stimulate them to display originality and cooperation in securing economies in management. The directors, however, did not desire to appropriate any larger sum than 5% of annual earnings to this plan. They were of the opinion, however, that a plan could be worked out, whereby, on the investment of \$50,000 or \$100,000 on the part of each chief executive, speculative possibilities could be developed such that, if the company continued to be finally successful over a period of years, the executives would have an appreciation on the money invested amounting to 400% or 500% in seven or eight years. The new plan also should allow the executives a larger stock ownership, in order to increase their active interest in the welfare of the company.

The following plan was devised to meet these requirements. A new corporation to be called the Associated Steel Partnership Company was to be organized to have a capital of \$13,520,000. This was to be divided as follows:

\$11,520,000—7% convertible non-voting preferred stock
 1,600,000—managers' participating stock
 400,000—managers' non-participating stock

The Associated Steel Company was to pay \$2,000,000 in cash to the Associated Steel Partnership Company and was to receive therefor \$1,600,000 managers' participating stock and \$400,000 managers' non-participating stock. The stock thus acquired by the Associated Steel Company was to be sold to the 28 chief executives of the company at not less than cost and in such amounts as should be decided upon by the directors of the company. The Associated Steel Partnership Company was to offer to purchase a total of 180,000 shares of common stock of the Associated Steel Company from the common stockholders of the company. Each common stockholder of the Associated Steel Company was to be offered the opportunity of selling common stock up to 10% of his holdings to the Associated Steel Partnership Company and receive therefor \$11 per share in cash and \$64 per share in 7% cumulative convertible non-voting preferred stock of the Associated Steel Partnership Company at par. The Mercury Investment Corporation was to agree to sell in addition to 10% of its holdings of Associated Steel common stock such an amount of Associated Steel common stock as was not subscribed by other common stockholders according to their rights. The result of these transactions would be that the Associated Steel Partnership Company would have assets of \$20,000 in cash and 180,000 shares of common stock of the Associated Steel Company valued at \$1,500,000; liabilities would be \$11,520,000 of 7% non-voting convertible preferred stock; \$1,600,000 of managers' participating stock; and \$400,000 of non-participating managers' stock.

The Associated Steel Company was to contract with the Associated Steel Partnership Company to pay to the latter annually for eight years 5% of its net earnings after 7% had been earned on the capital employed. The Associated Steel Company was to contract further to advance to the Associated Steel Partnership Company at the first of each year \$800,000 in cash on this account. If this advance of \$800,000 should be less than the amount due later in the year from 5% of the earnings, such excess then would be paid. In the event that the advance of \$800,000 should be more than the amount due the Associated Steel Partnership Company from the Associated Steel Company's earnings, the deficit was to be regarded as an unsecured loan made by the Associated Steel Company to the Associated Steel Partnership Com-

pany, and was to receive interest at 6%. The payments received by the Associated Steel Partnership Company under this contract were to be credited to an account called the managers' participating surplus. This managers' participating surplus was to be used for payment of special dividends on the managers' participating stock, or for retiring such stock at any time at a price equal to its par value plus a pro rata share of the managers' participating surplus.

All other income of the Associated Steel Partnership Company was to be credited to a general surplus account to be used for the payment of dividends on the convertible preferred stock, for interest on the bonds hereinafter mentioned into which the preferred stock might be converted; for the retirement of such preferred stock or bonds; and for payment of dividends on the managers' participating stock and the managers' non-participating stock in such proportions as the par value of the managers' participating stock plus the managers' participating surplus should be to the managers' non-participating stock and the general surplus.

A buyer of the participating managers' stock of the Associated Steel Company was to agree that the Associated Steel Partnership Company might and should repurchase this stock in the event of his death or of his leaving the employ of the Associated Steel Company. In the event of his death or his leaving the Associated Steel Company through no fault of his own, payment for the managers' participating stock was made at its par value plus its pro rata share of the managers' participating surplus at the time of repurchase; in other instances the owner of such stock was to receive its par value plus 80% of its pro rata share of the managers' participating surplus at the time of repurchase. The Associated Steel Partnership Company also was to have the option to repurchase managers' non-participating stock under similar conditions at a price equal to its net asset value at the time of repurchase. However, it was not obligatory for the Associated Steel Partnership Company to repurchase the managers' non-participating stock, as it was for the managers' participating stock. Entire discretion as to the sale of stock to the chief executives and its repurchase under the conditions outlined was at all times to be in the power of the board of directors of the Associated Steel

Company. The option to repurchase stock on the part of the Associated Steel Partnership Company was to expire at the end of eight years.

All of the stock purchased by the Associated Steel Partnership Company, together with the contract above mentioned between the Associated Steel Company and the Associated Steel Partnership Company, was to be lodged with a trustee under a trust indenture to secure an authorized issue of \$11,520,000 of eight-year 7% collateral trust bonds. These bonds were to be held by the trustee subject to the conversion rights of the holders of the 7% convertible non-voting preferred stock. Holders of the 7% convertible preferred stock were to have the right at any time within eight years to convert their stock in multiples of 10 shares into the equivalent par value of 7% \$1,000 collateral trust bonds.

The indenture of this bond issue was to have the following special provisions:

1. The Associated Steel Partnership Company should pay to the trustee each year that portion of the \$800,000 paid to the Associated Steel Partnership Company by the Associated Steel Company due to the Associated Steel Partnership Company at the first of the year according to the contract, not required for the payment of federal taxes; and in no event was this payment to be less than \$700,000.
2. Any balance paid later in the year by the Associated Steel Company to the Associated Steel Partnership Company in excess of the advance of \$800,000 at the beginning of the year was also to be paid to the trustee.
3. The Associated Steel Partnership Company was to pay to the trustee each year an amount equal to the entire net income of the company (before bond interest) from all other sources.
4. The Associated Steel Partnership Company was to be allowed to withhold from such amounts due to the trustee, first, from the amount indicated in paragraph 1, and then from the amounts indicated under paragraphs 2 and 3, an amount equal to the dividend payments made during the year on the 7% preferred stock, provided, however, that the amount withheld should not reduce the amount paid to the trustee below the sum required for bond interest.
5. The Associated Steel Partnership Company further was to be allowed to withhold, after all dividends had been paid on the 7% preferred stock, from the payments referred to under paragraphs 2 and 3, an amount sufficient to pay dividends on the managers' participating stock and the managers' non-participating stock not in excess of 7% on the paid-in capital and surplus earned thereon.

The amounts paid to the trustee under the provisions of the

INCOME ACCOUNT

Particulars	1922	1921
Net Earnings	\$25,044,488	\$ 2,316,544
Extraordinary Inventory Losses		\$ 6,641,230
Adjustments and Losses in Excess of		
Reserves Set Up	\$ 1,821,518	5,547,232
Reserve for Expected Losses		5,600,000
Reserve for Taxes	2,500,000	
Total Deductions	\$ 4,321,518	\$17,788,462
Net Earnings after Deductions	\$20,722,970	\$15,471,918*
Dividends		
Prior Preferred	\$ 744,374	\$ 722,996
1st Preferred	1,439,028	1,412,602
2nd Preferred	388,288	388,402
Total	\$ 2,561,690	\$ 2,524,000
Earnings Applicable to Common Stock	18,151,280	17,995,518*

* Deficit.

SURPLUS ACCOUNT

Particulars	1922	1921
Surplus at Beginning of Year	\$22,326,058	\$48,509,286
Special Debits	767,098	
Earnings Applicable to Common Stocks	18,151,280	17,995,918*
	\$39,710,240	\$30,513,368
Cash Dividends on Common Stock	4,070,846	8,187,310
Surplus at End of Year	\$35,639,394	\$22,326,058

*Deficit.

NET AFTER DEPRECIATION, FEDERAL TAXES, AND SO FORTH

Year	Total Net Earnings	Dividends on Common Stock
1920	\$15,153,408	\$7,157,316
1919	24,207,008	6,929,816
1918	6,156,412	4,494,924
1917	11,093,186	

foregoing paragraphs were to be used by the trustee, first, for payments of interest on the 7% collateral trust bonds outstanding as the result of conversion privileges and, second, for the retirement of outstanding 7% convertible preferred stock at par and of the collateral trust bonds outstanding. All such preferred stock or

collateral trust bonds so retired were to be canceled by the trustee. Failure of the Associated Steel Partnership Company to make such required payments to the trustee within six months after they were due was to constitute default on the part of the Associated Steel Partnership Company.

In the event of liquidation, the 7% cumulative preferred stock was to be paid in full at its par value and accrued dividends. The managers' participating stock was next to be preferred, to the

ASSOCIATED STEEL COMPANY—CONSOLIDATED BALANCE SHEET
AS OF DECEMBER 31, 1921 AND 1922

ASSETS	1922	1921
Plants, Real Estate, etc	\$102,083,188	\$ 99,438,476
Investments in Allied Companies..	22,917,546	22,550,812
Associated Steel Company Stock		
in Treasury	1,310,172	1,555,920
Marketable Securities	13,428	12,894
Good-Will	8,948,324	8,975,360
Cash	11,149,088	16,022,960
Sight Drafts	5,271,866	1,870,896
Accounts Receivable	6,941,230	7,577,939
Notes Receivable	1,782,016	1,917,992
Inventories	46,967,130	43,505,050
Prepaid Expenses	543,362	778,000
Deferred Expenses	1,579,110	1,842,672
	<u>\$209,506,460</u>	<u>\$206,049,170</u>
LIABILITIES	1922	1921
7% Prior Preferred Stock.....	\$ 12,872,600	\$ 10,772,620
6% 1st Preferred Stock.....	24,320,400	24,320,400
6% 2nd Preferred Stock.....	6,473,400	6,473,360
16,556,280 Shares No Par Value		
Common Stock at \$50 per Share.	82,231,400	82,585,590
Purchase Money Obligations....	1,758,586	2,775,594
Accounts Payable	13,924,976	6,256,172
Notes Payable		19,589,998
Accrued Items Not Due.....	7,126,954	6,357,912
Accrued Dividends	453,238	417,506
Reserve for Depreciation.....	20,331,162	15,011,110
Reserve for Doubtful Accounts....	572,458	431,508
Reserve for Expected Losses.....		5,600,000
Other Reserves	3,801,892	3,131,342
Surplus	35,639,394	22,326,058
	<u>\$209,506,460</u>	<u>\$206,049,170</u>

amount of its par value plus the amount credited to the managers' participating surplus. Managers' non-participating stock was to receive the remaining value of the assets of the company.

Since the market price of the Associated Steel Company's common stock at this time was \$75 per share, it was probable that the Mercury Investment Corporation might have to subscribe a considerable amount in excess of its 10% share or lose its stock control of the Associated Steel Company. In order to prevent this from happening, provision was made whereby the Mercury Investment Corporation's name should be changed to the Associated Steel Investment Company and a pro rata share of the capital stock of the Associated Steel Investment Company would be sold to the Associated Steel Partnership Company in lieu of Associated Steel Company's common stock. In this way the voting control in the Associated Steel Company owned in effect by the Mercury Oil Company could be retained and, at the same time, the equivalent of Associated Steel Company's common stock would be sold to the Associated Steel Partnership Company.

The net effect of the whole plan as stated by its sponsors was to give the chief executives of the Associated Steel Company the right to control a substantial amount of Associated Steel Company's common stock on a 15% margin without the common attendant risks of holding stock on margin. That is, the managers, with an investment of \$2,000,000 were to control \$13,520,000 worth of common stock of the Associated Steel Company. During the eight-year period, if the Associated Steel Company continued to be successful, the executives would receive a generous return on the money invested in the form of a 7% dividend on the par value of their stock plus the value of the surplus attributable to it. Furthermore, if the company continued to grow on the scale expected, at the end of the period the 7% preferred stock or collateral trust bonds would have been retired and the executives would then own the Associated Steel Partnership Company, the value of which would be several times the amount originally invested by them. If the company was not successful, the loss of the executives was limited to the amount invested by them. The individual amounts were large, but the directors believed that the executives were convinced thoroughly that the company would be successful.

X

DISTRIBUTION PROBLEMS

A. THE ECONOMICS OF PRICE DETERMINATION

I. BURTON WHOLESALE DRY-GOODS COMPANY—REFUSAL TO CUT PRICES BELOW MARKET LEVEL IN DEPRESSION OF 1920

In May, 1920, when the first indications appeared of the approaching end of the period of prosperity, the Burton Wholesale Dry-Goods Company had a large inventory of merchandise which had been purchased during the previous months of high prices. During the summer of 1920, when prices dropped rapidly, the majority of the customers reduced their purchases, and in many instances stopped buying entirely. The company wished to reduce its stock of merchandise as rapidly as possible because of the increasing losses incurred as a result of the falling prices. It considered alternate plans: to base prices on the cost of replacement and in this way to follow the level of the market on the decline or to cut prices below the market in an attempt to secure a more rapid liquidation of the inventories.

The company distributed a complete line of dry-goods; about 85% of its sales, however, were hosiery, underwear, and children's knitted goods. Most of these products were distributed under the company's trade-mark. A few nationally advertised manufacturer's brands such as "Sealpax" and "B. V. D." underwear were carried by the company, however, and comprised about 10% of its sales. Other manufacturers' brands had been discontinued, for the company had learned by experience that injurious price-cutting occurred to the greatest extent in merchandise which was marketed under the manufacturer's widely known brand. The company carried a few of the best-known brands because of the insistent demand for them, but in all cases it had similar products under its own trade-mark which it attempted to market by concentrated sales effort and by advertising. The company's prosperity was safeguarded by building up

a demand for its trade-mark, for in merchandise sold under manufacturers' brands the company could be undersold by any other wholesaler who wished to cut prices.

Retailers who purchased from the company had extensive stocks of merchandise in the summer of 1920 which they were trying to sell as rapidly as possible in order to avoid losses from the declining prices. Retail sales decreased because consumers purchased only for current needs. The retailers, consequently, were in a more favorable position than wholesalers, for they could sell their stocks of merchandise gradually, and refrain from further purchases until their stocks were depleted.

It was possible that the demand for the company's trademarked merchandise might be increased if prices were cut below the market. When consumers (who had become familiar with the brand in advertisements) learned these products were priced lower than similar articles under other well-known brands, they might be influenced to purchase the company's merchandise. In this way, the company's sales could be increased.

From another point of view, however, the results from cutting prices below the market might be detrimental to the company. Retailers were likely to look upon such a policy with suspicion and to lose confidence in the company. They had purchased the company's products at the previous high prices and, consequently, incurred losses as a result of each drop in the market. They realized that the company had to follow the market and could not maintain its prices above the general level, but they could not be expected to look with favor upon the cutting of prices below the market. A change in the relationship between the prices of the company's products and of similar articles, furthermore, might make consumers apprehensive of impaired quality.

Retailers were expected, moreover, to purchase with caution during the months of depression. When prices were falling and distribution had decreased, there was no probability of retailers anticipating demand by purchasing in advance of their immediate requirements. When they had succeeded in selling their stocks, their next course was to purchase only in limited quantities to meet immediate demands. The only pressure which could induce them to resume purchasing, therefore, must come from consumers.

The company decided that it should sell at prices based on the market and not attempt to anticipate further declines. The merchandise, therefore, was to be sold at the cost of replacement, plus the company's usual mark-up, without regard to the original cost. The officials of the company were of the opinion that the demand for their trade-mark could not be increased by cutting prices below the market, and that this policy was likely to injure the reputation of the company among its retail distributors and of the brand among consumers.

2. ALLERTON STOVE COMPANY—PRICE POLICY IN PERIOD OF BUSINESS DEPRESSION

The Allerton Stove Company manufactured coal and gas household ranges. Although the company endeavored to secure national distribution, the majority of its sales were concentrated in New England and New York State. The product had a reputation for quality at a reasonable price. The company advertised principally in metropolitan newspapers, but also cooperated with the retailers in local advertising in the smaller towns. In large cities, the company's products were distributed through several retailers but in smaller communities they were marketed through exclusive agencies. The retail prices of the stoves were from \$100 to \$250.

Previous to the depression in 1920, the volume of sales of the Allerton Stove Company was comparatively constant from year to year. The sales were extremely seasonal, however; ordinarily 70% of the total yearly sales were made in the last six months of the year.

By June, 1920, the depression had affected many industries; but because of the seasonal element and the necessity for heating equipment, the sales of the Allerton Stove Company did not decline appreciably until the latter part of 1920. The management of the company had not foreseen the depression, and in June, 1920, the inventory was 50% greater than the demands of customers warranted. In November the inventory was deflated to replacement costs. The plant had continued to operate throughout 1920 at full capacity. In January, 1921, however, sales declined abruptly and did not justify the operation of the plant, but in order to maintain a nucleus of the organization the factory

continued to produce at about a quarter of normal capacity.

After January, 1, 1921, it was not possible to reduce the cost of stoves, in spite of the price decline in raw material, because the unit cost of production increased on account of the reduced schedule of operation. The "buyers' strike" had affected many other products; therefore, the company considered a price reduction. Drastic reductions in price on many basic raw materials already had been effected. The first six months of the year were always dull in the stove industry. In order to stimulate sales, the company made a flat reduction of 15% on all models. It was believed that this would be compensated for, to some extent, through the decrease of unit costs caused by the increased volume of sales. In February, a further reduction of 5% was made. These reductions, however, did not increase sales appreciably. Unit costs remained high and the plant continued to operate at a loss.

On March 15, 1921, the advisability of further price reduction was considered. The previous ones had been a matter of expediency, and competitors' prices had been lowered in order to satisfy the public demand. Although another reduction might have resulted in little actual profit on the sales, it might have increased the volume of sales to a point at which the factory no longer operated at a loss.

It was decided, however, that no further price concession should be made. The company had obtained speculative profits on its purchases during the period of rising prices which compensated for the losses caused by the subsequent reductions. The reasonable demands of the consumer for lower prices had been met. Because of the usefulness and quality of the product, a further reduction in prices was unjustified and constituted mere price cutting, in order to secure sales and to reduce inventory. The continuation of this policy suggested lower quality to the consumer, and made difficult the restoration of prices which were consistent with the price of production. The same methods could not be applied to a standard manufactured product and to basic, semi-manufactured products such as rubber, leather, and sugar. No other stove manufacturer indicated that he intended to reduce prices further.

The company continued to operate its factory at one-quarter capacity until June, 1921, when it became necessary to operate

at full capacity in order to meet the probable fall demand. The subsequent volume of sales proved sufficient to dispose of the inventory that had been accumulated. The management of the Allerton Stove Company, therefore, deemed that its policy of not reducing prices below those of other manufacturers had been correct. The following are the statements of the financial condition of the company as of December 31:

**ALLERTON STOVE COMPANY—CONSOLIDATED BALANCE
SHEET AS OF DECEMBER 31, 1920 AND 1921**

ASSETS	1920	1921
Real Estate	\$ 334,733.90	\$ 465,117.18
Machinery and Equipment.....	217,704.67	518,547.35
New Buildings	55,629.81	.....
Merchandise	403,691.09	276,496.78
Accounts Receivable and Cash...	200,587.61	228,065.33
Prepaid Items	12,513.31	10,848.34
Trade-Marks	31,750.00	31,750.00
Unamortized Charges	71,079.36	77,599.54
	<hr/>	<hr/>
	\$1,327,689.75	\$1,608,424.52
LIABILITIES	1920	1921
Capital Stock	\$ 841,375.00	\$ 841,375.00
Accounts Payable	26,713.18	9,036.05
Notes Payable	152,781.00	223,005.65
Accrued Items	10,709.91	6,687.82
Reserve	3,586.48	336,688.43
Surplus	292,524.18	191,631.57
	<hr/>	<hr/>
	\$1,327,689.75	\$1,608,424.52

3. GENERAL MOTORS CORPORATION—ESTABLISHMENT OF A POLICY
FOR SETTING PRICES ON AUTOMOBILES

The General Motors Corporation was formed in 1908 to act as a holding company for the stock of several automobile manufacturing companies. In 1916, it was reorganized and the function of actual management was taken over. In 1922, the company produced the following automobiles: Buick, Cadillac, Chevrolet, Oakland, Oldsmobile, and G.M.C. trucks. In addition, it made these nationally advertised trade-marked products: Fisher bodies, Delco light and power plants, Frigidaire, Hyatt roller bearings, New Departure ball bearings, Klaxon horns, Harrison radiators,

Delco-Remy starting, lighting, and ignition systems, Jaxon rims, and A. C. spark plugs. Geographically, the manufacturing plants were distributed as follows:

New Jersey	3 cities	New York	4 cities
California	2 cities	Ohio	3 cities
Connecticut	3 cities	Pennsylvania	2 cities
Illinois	1 city	Texas	1 city
Indiana	2 cities	Wisconsin	2 cities
Missouri	1 city	Canada	2 cities
Michigan	7 cities		

Under the supervision of the General Motors Export Company and the General Motors, Limited, of Great Britain, which had branches or representatives in many parts of the world, the General Motors Corporation was developing extensive markets for motor cars abroad.

In 1920 and 1921, the General Motors Corporation underwent severe financial losses caused primarily by the violent decline in prices during those years. In 1921, a new management was placed in control of the company. The new president, in his annual report to stockholders for the year ending December 31, 1922, stated that, in his opinion, the losses of 1920 and 1921 were the result of "loose and uncontrolled" methods of administration. He stated that the decline in prices during 1921 was foreseen to a large extent at least by the board of directors and chief executives. He further stated that these executives were unable to force executives in control of the different companies owned by the General Motors Corporation to carry out the fundamental policies laid down by the board of directors and the finance committee.

The new management, therefore, was of the opinion that its most important task was to reorganize the methods of administration and control. In an organization so extensive as the General Motors Corporation, it was apparent that the chief executives could not devote their time to details of administrative procedure. It was realized that a clear distinction should be made between questions of fundamental policy and those of the administrative procedure in carrying out such policies. It was the desire of the chief executives to develop and outline methods of administrative procedure themselves, but to leave the practical application of these methods to executives employed for that purpose.

Most of the questions of fundamental policy centered around

the subject of financial control. A system of inventory control and cash control was developed to prevent the repetition of the disasters of 1920 and 1921. Closely related to these subjects were those of forecasting sales and production. Different methods were established for making such forecasts. None of these systems were complete, however, nor could accurate forecasts be made unless there was established a definite policy as the basis for pricing the company's products. The executive in charge of a subsidiary company, for example, could not forecast his sales or production or determine in advance the inventories and commitments that might be needed unless he knew what the prices of his product were to be.

The method of determining prices that was then in operation was essentially haphazard and not related to any program worked out in advance. Accurate costs of production, selling, and administration were kept and prices were quoted that were considered sufficient to yield the company the desired profit above the costs so determined. No standard costs were estimated, and specific prices were based on frequent determination of costs then existing. Each change in price on the different products became a question of fundamental policy. Prices were established by the chief executives of the General Motors Corporation in conference with executives in charge of the production and sales of the products in question.

To meet this need for an established policy of pricing, the following method was adopted in the latter part of 1923. This method was developed by one of the vice-presidents, who had given several years' thought to this matter. Specific prices still were to be determined by the chief executives in conference with sales and production executives in charge of the products in question. But, by the establishment of a definite procedure, the executives in charge of each product were to be able to determine in advance what changes in prices were to be made. This in turn would permit them to make more accurate and valuable estimates of production, sales, inventories, and commitments. A description of the price policy established can best be gained by the quotation of an article written by one of the vice-presidents of the General Motors Corporation. This is presented in the following pages without editorial change.¹

¹. See also General Motors Corporation, above, p. 308.

PRICING POLICY IN RELATIONSHIP TO FINANCIAL CONTROL¹

The problem of modern industrial management holds two aspects, quite separate and distinct in basic character. On the one hand lie the governing considerations of return on investment and protection of capital employed; on the other, the correlated considerations of operating procedure and detail. In the broad sense the interests of capital are represented by a board of directors and such sub-committees as may be constituted, having jurisdiction over policies; while authority and responsibility for operating results are lodged with executives and subordinate departments.

Sound policies must be founded upon a knowledge of the nature and characteristics of the individual business, and the point of view of the executive in actual contact with the operating necessities and difficulties is essential. Intimacy with the daily operating problems leads to intelligent decisions of policy, and thus it is that organization often takes the form of committee management, where questions of policy are dealt with by the board of directors or a representative committee comprised of departmental executives. This form of management possesses the attribute that the departmental executive is called upon to administer policies in the formulation of which he has had a direct voice, and may be said theoretically to afford the maximum of opportunity for the coordination of the two aspects of management. Practically, however, it always renders more difficult the differentiation between questions of policy and operating procedure. Policies should be dealt with from an impartial understanding of the operating aspect, and in the exercise of the dual function it is difficult for the individual to divorce himself from the departmental view-point.

Questions of policy merge themselves with questions of operating procedure so that frequently it is difficult to disassociate the two. In a moderate-sized business where ownership and management are identical, and where the departmental executives are in actual contact with the detail operating problems, there may even be no conscious segregation of the broad questions of policy. Decisions are made for executive action which involve a composite consideration of all of the elements involved, and the interests of

1. Reprinted by permission from *Management and Administration*, vol. 7, p. 195. Another article by the same writer (Mr. Donaldson Brown) appears at p. 417 of the same volume of this publication: "Pricing Policy Applied to Financial Control."

capital are served by direct control. In modern industry, however, where economies of manufacture and distribution are derived from large-scale operation, ownership and management cannot be identical. Capital is derived from various sources and from many stockholders identified only to a limited extent with management.

The magnitude and financial strength of General Motors is such that it is enabled to effect great economy in manufacture and distribution. Its organization is designed so that these advantages may be enjoyed without the sacrifice of coordinate control so often experienced in big business. The corporation comprises a number of divisions which manufacture and sell passenger cars and commercial vehicles of non-competitive classes, and numerous divisions whose production of component parts and accessories is sold to General Motors divisions and to outside automobile companies. Each division is equipped with a self-contained organization having complete jurisdiction over manufacture, sales, and finance, subject to control from the central authority. The ordinary, every-day questions of policy, embodying even such important matters as production schedules, inventory commitments, design of product, and methods of distribution are left ordinarily within the consideration and decision of the divisions themselves, under certain general limitations, and in every way the men on the firing-line are inspired with a sense of responsibility for results.

The central organization embraces talent in automotive engineering and research, and experts dealing with important problems of improved methods in manufacture and distribution, all of whom serve in a more or less advisory capacity. Apart from these important adjuncts, and certain necessary activities in finance and accounting, law, and related matters, the central organization deals almost exclusively with questions of policy. The president is general manager of the corporation in fact, but controls the operations by the establishment of principles and the interpretation of policies, and refrains from entering into questions of operating detail except in cases where the two are inseparable. The executive and finance committees, as active bodies subject to the board of directors, have final jurisdiction over the entire business through the enunciation of policies and by direct action in matters involving essential points of policy.

This brief description of the character of organization is given as illustrating the fact that the management of General Motors

is such as to afford a peculiarly good opportunity for segregation of the broad questions of policy which are of fundamental concern in the interests of the stockholders. One phase of the problem lies in the direction of formulating policies in such terms as to render them understandable, so that they will actually govern executive action and at the same time not hamper the exercise of initiative on the part of those responsible for operations. It is to this phase of the problem that the present discussion is directed.

One of the most important necessities of policy has to do with financial control. Expansion must be limited within the resources of capital, and in a corporation such as General Motors, the available capital must be directed into channels that hold the greatest promise. Capital must be derived from undivided profits or from the sale of securities, and the amount available from these sources must be measured in the light of its economic cost, with due regard to dividend income to which the stockholders are entitled. General Motors employs a very comprehensive scheme of forecasts of the prospective earnings and capital position of the corporation, which supply the basis of financial control.

CONTROL OF CAPITAL BY FORECAST

Space does not permit the presentation of a complete outline of the forecast scheme. A brief description is necessary, however, since it is through this that the finance and executive committees are kept informed and thus enabled to exercise such control as may be needed from time to time.

In December of every year, each division is required to present an outline of its view of probable operations for the succeeding year, embodying estimates of sales, earnings, and capital requirements. These outlines are in three forms: "pessimistic," representing a minimum expectation; "conservative," representing what is considered a likely condition, and "optimistic," representing what the name implies, with production and sales capacity as a limitation.

Obviously, in a business such as the automobile business it is not possible to forecast conditions accurately so far as 12 months ahead, and these annual compilations are not accepted as a basis of commitments, but, with due allowance for elements of error, they are of valuable assistance in guiding the general plans.

Definite forecasts are submitted monthly, on the twenty-fifth

of each month, by each division, covering the current month and the succeeding three months. These forecasts cover sales and production each month and indicate the amount of investment at the end of each month in plant, and working capital items, and also outstanding inventory commitments. If these forecasts are accepted they constitute authority for each division, respectively, to proceed upon the manufacturing schedule and to make forward commitments for materials up to the requirements of the forecast, in the judgment of the division manager. Special authority is required from the central office to cover any commitment beyond the requirements of these authenticated forecasts.

FORECASTING AND PRICE POLICY

All forecasts, as submitted, are scrutinized by the central office and compared with current and past performance, attention of the proper officials being called to any abnormalities or marked deviations from what might be deemed a conservative sales expectation. Experience has led to the establishment of standards of working capital requirement in relation to volume of business, and the forecast investments in receivables and inventory are carefully checked against such standards, allowance being made for seasonal fluctuations. The tendency of manufacturing costs and of selling and administrative expenses are observed, and profits are analyzed with reference to the pricing policy laid down as governing the operations of a given division.

It has already been said that the forecasts supply the basis of financial control. The forecast, representing the deliberate plan of the corporation as applied to a division, must be based upon an accepted price policy since the factor of sales expectation is necessarily dependent upon the question of price. If the division manager preparing his forecast is in full understanding of the corporation's price policy, he can proceed intelligently. If not, he lacks the prime requisite for formulating his expectation of sales volume. Therefore, at the heart of the problem of financial control is the question of price; in fact, the whole is inevitably so interwoven that a comprehensive pricing policy must be an embodiment of a financial policy.

The question of price is one necessarily involving a great variety of considerations. While a specific price as applied to a particular product at a given time may be symbolic, it can never serve suffi-

ciently as an expression of policy. Borrowing a definition of Webster's, there must be a manifestation of the "principles on which any measure or course of action is based, having regard to both the ends aimed at and the measures used to arrive at them." Conditions are changing continually, and there must be a common understanding of the principles embodying the corporation's policy if the organization is to be alive to any need which may arise for reconsideration of price.

To gain a price policy that is comprehensive and understandable *as a policy*, and not misunderstood as a dictation of *specific price*, requires a method founded upon acceptable theory. The following is a description of a method of price analysis that has been found to be adaptable to the situation of General Motors.

THE PRICE THEORY

It is generally accepted that the lower the price of a useful article, the greater will be the demand for it. A new industry, with a product which proves to be of stable character, passes through a development period characterized by a deficiency in available supply as compared with the latent possibilities of demand. This deficiency results from limitations upon productive and distributive capacity imposed by the adjudged capital hazard, the limitations of personnel experienced in production and distribution, and the time which must elapse before additional facilities can be provided.

So long as there is a deficiency of supply the natural tendency toward an equilibrium between supply and demand will manifest itself by means of price, and the possible scope of demand will not be satisfied until the facilities of production and distribution and the ability of the industry to expand in step with a continued normal growth of demand have reached a state of balance, the point of stabilization.

Profit is, of course, a component of price. During the period of development the excess over the ultimate economic price will be reflected partly in excess costs, because of insufficient knowledge of the art of production and distribution, coupled with scarcity of experienced personnel; and partly in the profit margin, because the final balancing between supply and demand must manifest itself at that point.

Presuming a physical condition under which the supply of a commodity is augmentable, any addition to existing, producing, or distributing facilities requiring extra capital is dependent upon an attainable profit adjudged to be commensurate with hazard and cost of capital required.

An acceptable theory of pricing must be to gain, over a protracted period of time, a margin of profit which represents the highest attainable return commensurate with capital turnover and the enjoyment of wholesome expansion, with adequate regard to the economic consequences of fluctuating volume. Thus, *the profit margin, translated into its salient characteristic, rate of return on capital employed, is the logical yardstick by which to gage the price of a commodity with regard to collateral circumstances affecting supply and demand.*

The considerations which follow are consistent with this theory, and although resting upon a theoretical basis, this method of price analysis is wholly practical.

COST OF CAPITAL FUNDAMENTAL FACTOR

Supply of a manufactured product is limited on the one hand by peculiar difficulties in the way of enlarged production and distribution, such as scarcity of raw material or labor, lack of diffused knowledge in the art, restriction by patent rights or secret processes, and so forth. These limitations will reflect themselves in the price of the product through costs or profit (or both) to an extent depending upon the degree of limitation. On the other hand, supply is limited by capital requirement. The method here advocated associates these limitations upon two sides of an equation and recognizes the limitations upon the capital side as fundamental.

If unlimited fresh capital could be had at a fixed interest cost, the pricing theory would be to set the price at that point which would yield the highest attainable volume so long as it be assured that each succeeding increment of volume, resulting from price influence, afforded added profit in excess of the interest cost of the added capital requirement. Stated another way, if at a given price and volume the profit margin is such as to yield a high rate of return on the capital employed, and if volume is susceptible of increase by price reduction, then a price reduction is desirable,

provided the added volume affords an increase in aggregate profit in excess of the economic cost of the additional capital requirement.

A monopolistic industry, or an individual business under peculiar circumstances, might maintain high prices and enjoy a limited volume with very high rate of return on capital indefinitely at the sacrifice of wholesome expansion. Reduction of price might broaden the scope of demand, and afford an enlargement of volume highly beneficial, even though the rate of return on capital might be lower. The limiting considerations are the economic cost of capital, the ability to increase supply, and the extent to which demand will be stimulated by price reduction.

Thus, it is apparent that the object of management is not necessarily the highest attainable *rate of return* on capital, but rather the highest return consistent with attainable volume, care being exercised to assure added profit with each increment of volume that will at least equal the economic cost of additional capital required. Therefore, the fundamental consideration is the economic cost of capital to the individual business.

As a matter of fact, there is never an unlimited supply of capital at a fixed interest cost, and the economic cost of capital embraces the questions of capital position, availability of capital within the business to meet the requirements of added volume, sources of additional capital, and the position of the common stockholders or proprietors as affected by their contribution of an appropriate part of the capital employed, through retention of earnings or otherwise.

NEED OF A BASIC PRICING POLICY

In the absence of a governing policy, the pricing of product is likely to be haphazard and inconsistent with the primary considerations. In any event, the complexity of the problem is apparent, the elements involved, while not all susceptible of exact analysis, being present in fact. Unless those elements are considered in orderly form they are more than likely to lose their relative significance.

Therefore, there is always the need of a basic pricing policy that is sufficiently definite and inclusive to afford effective control, with its constituents sufficiently separable to facilitate continued scrutiny, so that necessity for modification will be detected promptly.

ly. As serving these essentials a sound pricing policy must be founded upon a clear conception of what might be implied in the phrase *economic return attainable upon the capital required*.

BEARING OF AVERAGE CAPITAL TURNOVER

The average capital turnover of a manufacturing business, apart from other considerations, varies according to the degree of fluctuation in volume, which condition is intensified by high proportionate fixed investment. Facilities must be maintained to take care of peak volume, and the farther the peak is removed from the average volume the lower the average productivity of fixed facilities. With equivalent average costs and price of product, the average return on capital employed in the case of one plant operating at an average of 85% of capacity will be greater than in the case of an equivalent plant operating at an average of 75% of capacity. Either the capacity of plant must be greater or the average volume less in the latter case, and the productivity of the capital correspondingly less.

In the case of two competing establishments, situated respectively as just cited, the relative return attainable upon capital will be affected directly by the conditions named. Furthermore, so long as the return is greater than the economic cost of capital, and demand may be increased by price reduction, the rate of return that is desirable to govern the pricing of product is qualified by the question of capital turnover, even where there is no competition or where the rate of capital turnover is common throughout a competitive industry. This is because at a given rate of return on capital the percentage profit margin is indirectly proportionate to the rate of capital turnover, and a wide margin supplies a corresponding latitude for stimulation of demand.

In other words, a reduction of 5% in price might have an equivalent stimulation upon demand, but due to its proportion of the profit margin, the resultant volume might in one case afford added profit in excess of the economic cost of additional capital requirement, while in another case of higher capital turnover the added volume might afford no added profit, or that which is less than the economic cost of the additional capital requirement.

The rate of return attainable upon capital is interlocked with the question of capital turnover, and a measure of the normal

average capital turnover is necessary in forming a conception of the economic return attainable.

PRICING POLICY MUST CONSIDER AVERAGE RETURN

While it is ordinarily recognized that return on investment is the basis of a pricing policy, the usual procedure lacks the complement of a systematic gage as to the suitable variation of return in periods of relatively high or low volume. Capital is not attracted, except for speculative purposes, by a temporary opportunity for return, but by the promise of a suitable ultimate average, coupled with the element of amortization where permanency is not assured. With this attribute recognized, it becomes obviously confusing to treat with the pricing question upon a plane of capital return in specific periods when, by the nature of things, the basis must be changing continually because of fluctuating volume.

The adaptation of the basic pricing policy is much more orderly if it is conceived and laid down as a standard representing the average condition, and so arranging its employment for price-fixing purposes that a suitable variation in return on capital in transitory periods is automatic. Therefore economic return attainable, as used in this article, is the accepted standard which represents expectation on the basis of an ultimate average condition. It should be under continual observation and should be modified to accord with changes in fundamental conditions, but it does not vary by reason of fluctuation in volume of business.

NORMAL AVERAGE RATE OF PLANT OPERATION

The normal condition of any business of a stable character affords continued growth in step with the growth and increase of purchasing power of the community served, coupled with the broadening influences upon the scope of consumption arising from lowered prices and enlarged appreciation of the utility of the commodity. Such growth cannot follow a straight-line curve, but is interrupted by conditions existing in boom periods and periods of depression. If the trend line could be exactly located it would represent a normal average condition, but quantitatively it is undergoing continual change, and possibly will at no time coincide with actual volume.

On the other hand, a fluctuating volume, at times above and at times below the trend line, may be normal at all times over a

series of years, for volume may be said to be normal if it is suitable in view of collateral circumstances. Thus, an effort to establish a definite quantity volume as normal would be meaningless except as of a given moment. Still the normal average rate of plant operation is an essential in determining average capital turnover, so it is necessary to establish a factor of some kind that is representative of a normal average condition.

If for a moment it be conceived possible to determine the average volume trend line of a business projected forward, and to predetermine the degree of fluctuation above and below the average in the course of a business cycle, it would follow that plant capacities would be maintained on the basis of average demand, with an allowable margin to take care of the excess in boom periods. Plants would operate at the point of practical capacity in years of highest volume because the demand in such periods would be recognized as peak requirements not calling for additional capacity margin. Any capacity in excess of the requirements of the highest-volume year would admittedly be recognized as representing unnecessary investment upon which no return could be enjoyed. The truth of the assertion is not destroyed by the fact that conditions surrounding business are not such as to admit the exact premise as a practical matter. Capital invested in plant, if proved unnecessary, is admittedly non-productive. If the condition arises by reason of business uncertainties, and is warranted on the score of prudent management, the non-productive investment assumes the character of normal capital requirement. If it arises from the lack of reasonable analysis and judgment of business conditions it should be eliminated, in effect, from the capital upon which a pricing consideration is based.

BEARING OF INCREASED PLANT CAPACITY

The enunciation of a basic policy to govern questions of plant extension greatly furthers the orderly control of fixed investment. If this is definitely tied into the pricing policy the result is a systematic coordination between fundamental considerations that are inevitably interwoven.

To illustrate, suppose that a basic policy has been established to the effect that plant capacities, on the basis of practical annual output, shall be maintained at 125% of the *judged average trend volume*, (the margin being deliberately preserved to take care of

peak requirements). Then the accepted normal average rate of operation is instantly fixed at 80% of the practical annual capacity. If a given plant operates at an actual average rate below 80%, then there is excess investment in capacity pronounced unnecessary by the terms of the established policy.

ESTABLISHMENT OF STANDARD VOLUME

It will be found from a description of the method which follows, that the establishment of a percentage representing an assumed normal average rate of plant operation is an essential factor in the analysis of price. This determines the so-called standard volume which is accepted as the basis upon which costs will be measured, and upon which the margin of profit is determined as necessary to afford a given average rate of return upon capital employed. The established percentage must reflect the unavoidable fluctuations of business which render an even rate of production impossible, and as far as practicable should represent the economic situation of the industry, rather than any abnormal situation which might be recognized as pertaining to a given plant. For example, the operation of a given plant at a lower rate than competing plants leads to higher costs and increased margin of profit necessary for a given rate of return on fixed investment. Thus the establishment of a percentage that is below the average rate at which competitive plants actually operate tends towards inflation of prices above a proper economic level. Therefore, if excess capacity exists by reason of a previous misconception of the intrinsic position of the industry; or if an individual plant operates at subnormal rate, or suffers fluctuations of volume of greater magnitude than normal, resulting from misjudgment of competitive conditions or other cause, no warranty is supplied for modifying a percentage established as representing normal average rate of operation. In any such case, a lowering of the established percentage would tend to intensify rather than to improve the condition.

On the other hand, if it be judged at any time that the reasonable expectations with respect to fluctuations of volume normal to the industry are of greater or less magnitude than admitted by the terms of the established policy, then the established percentage should be modified correspondingly.

Obviously, it is not possible to predetermine the actual contour

of a production curve, and the assumption as to the normal average rate of plant operation is a matter of judgment. So, also, is the question as to the *economic return attainable*. Prices might be maintained to yield 20% average return on capital on the assumption of plants operating at an average of 80% of practical annual capacity, and time might prove actual operation at an average of 65% and the return 15%. It would not follow necessarily that, had the actual operating condition been foreseen, 20% return could have been attained. The two questions are necessarily associated, and the basic pricing policy should reflect reasonable allowances for unavoidable fluctuation of volume, requiring that the *economic return attainable* be stated at all times upon the basis of an accepted conception of the normal average rate, or attainable average rate of plant operation. This will be expressed as a percentage of practical annual capacity, and will be known as *standard volume*.

The foregoing has dealt with the principles involved in the price consideration. The following deals more concretely with the method of analysis designed to give reflection to these principles.

INFLUENCE OF VOLUME FLUCTUATIONS ON COSTS

Costs of production and distribution per unit of product must vary with fluctuation of volume, because of the uncontrollability of some of the expense items. Ordinarily, raw materials and productive labor may be referred to as 100% variable, as the aggregate will vary with volume and remain uniform per unit of product except for price changes. Among the uncontrollable items are such expenses as depreciation, taxes, and so forth, which may be referred to as 100% fixed, since within limits of capacity the aggregate will not change, but, per unit of product, will vary indirectly with volume.

There will be a group of items, partially controllable, as to which there is no exact means of determining the degree of variation, and with respect to these it is practicable to approximate the condition by applying a factor of variability that will afford a reasonable allowance for variation in the aggregate due to changes in volume.

Generally speaking, within the limits of existing capacity, the influence of volume falls upon the final unit cost of product in the following way:

1. *Raw Materials and Productive Labor*—Generally unaffected by volume.
2. *Manufacturing Expenses*—Affected by volume in varying degree according to the character of the various expenses involved, as for example:
 - (a) *Fixed Expenses* (such as depreciation, taxes, and so forth.) Amount per unit of product affected in indirect proportion to volume.
 - (b) *Partially Controllable Expenses* (such as light, heat, power, salaries, and so forth.) Amount per unit of product affected by volume according to the degree of variability. A factor of variability to be adjudged and applied to the current aggregate expense of the group, to arrive at the portion considered as 100% variable. The remaining portion will be considered to be "100% fixed."
 - (c) *Controllable Expenses* (such as inspection, handling of material, and so forth.) Amount per unit of product unaffected by volume.
3. *Commercial Expenses, in Distribution and Administration*—Affected by volume in varying degree according to the character of the various expenses involved, as for example:
 - (a) *Fixed Expenses* (such as main administrative salaries, rents, and so forth.) Amount per unit of product affected in indirect proportion to volume.
 - (b) *Partially Controllable Expenses* (such as salesmen's and other salaries, traveling expenses, and so forth.) Amount per unit of product affected by volume according to the degree of variability. To be treated with as mentioned in section above under manufacturing expenses.
 - (c) *Controllable Expenses* (such as loading and shipping commissions, and so forth.) Amount per unit of product unaffected by volume.

As unit costs are affected by fluctuation of volume, it is not practicable nor desirable to alter selling prices so as to maintain a uniform profit margin. The normal average of manufacturing expense, and distribution and administration expenses should be estimated. These, added to the raw material and productive labor cost, will give an applicable total cost on an estimated normal average basis. The pricing of product should be in relationship to costs on the normal average basis which had been arrived at in this manner.

TREATMENT OF MANUFACTURING EXPENSE

Manufacturing expenses are absorbed in factory costs through a burden account. If the burden rate is altered from month to month, so that the actual expense is absorbed at all times, the consequence is a distortion of costs and of inventory values due to the effect of fluctuating volume. The more acceptable accounting practice is to apply a standard burden rate, representing the proper absorption of burden at standard volume. In periods of low volume, the unabsorbed manufacturing expense is charged against profits as "unabsorbed burden," while in periods of high volume the overabsorbed manufacturing expense is credited to profits as "overabsorbed" burden. In the interest of coordination it is important that standard volume for purposes of burden absorption shall coincide with standard volume for purposes of price analysis.

To arrive at the burden rate which is to be applied according to the foregoing purposes, careful analysis must be made of the character of manufacturing expenses, with a view to determining the portion which is of non-controllable character. The various items should be allocated respectively to the three groups (*a*), (*b*), and (*c*) as set forth in the foregoing. As to groups (*a*) and (*c*) there is no difficulty in arriving at the non-controllable expense; the whole of class (*a*) is non-controllable, and class (*c*) holds no non-controllable expense. The degree of variability of class (*b*) has to be estimated in the light of operating experience, and it is important to keep a close follow-up analysis of this so that errors of assumption or of estimate may be corrected promptly.

TABLE 31.—ACCOUNTING PROCEDURE FOR FINDING TOTAL MANUFACTURING EXPENSE

Item	Actual Current Condition	Percentage of Standard Volume	Estimated Condition at Standard Volume
Production, Units	55,000	137.5	40,000
Productive Labor	\$ 8,250,000	137.5	\$ 6,000,000
Manufacturing Expenses:			
(<i>a</i>) Fixed Expenses	\$ 2,000,000	100	\$ 2,000,000
(<i>b</i>) Partially Controllable Expenses	9,325,000	122.7	7,600,000
(<i>c</i>) Controllable Expenses	550,000	137.5	400,000
Total Manufacturing Expense	\$11,875,000	118.75	\$10,000,000

The hypothetical case given in Table 31, on the opposite page, may illustrate the general principles of accounting procedure.

It will be supposed that burden in this instance is being absorbed on the basis of productive labor. It is estimated that at standard volume the total aggregate manufacturing expense would be \$10,000,000 and that the productive labor would be \$6,000,000, thus giving a standard burden rate of 166½%. This burden rate would be applied as a charge to factory cost, and with operations at 137.5% of standard volume the overabsorbed burden would be \$1,875,000, as follows:

Productive Labor at Current Production.....	\$ 8,250,000
Burden Absorbed at Applied Burden Rate, 166½% ..	\$13,750,000
Actual Manufacturing Expense.....	<u>11,875,000</u>
Overabsorbed Burden	\$ 1,875,000

This amount would be credited to operations through an overabsorbed burden account. In this way the factory cost of product, as accounted for, is not affected by fluctuations in volume of production.

TREATMENT OF COMMERCIAL EXPENSES

Commercial expenses are charged off from month to month against operations, and there is not involved the question of distortion to asset values in consequence of fluctuating volume, as in the case of manufacturing expenses. Therefore, there is no need of any special accounting procedure such as that described in the foregoing. In the consideration of price, however, it is just as important to analyze the non-controllable character of commercial expenses, and to allow for the same on the basis of a normal average operating condition.

It is customary to allow for commercial expenses as a percentage of sales. The hypothetical case presented in Table 32 illustrates the general way in which this is given consideration.

In this case the allowance for commercial expenses would be 7% of sales, that being the estimated condition at standard volume, representative of a normal average operating condition.

STANDARDS OF CAPITAL REQUIREMENT

The rate of capital turnover is usually the most important factor in a price consideration, since the margin of profit in rela-

TABLE 32—ACCOUNTING PROCEDURE FOR FINDING TOTAL COMMERCIAL EXPENSES

Item	Actual Current Condition	Percentage of Standard Volume	Estimated Condition at Standard Volume
Volume of Sales Units.....	55,000	137.5	40,000
Volume of Sales Amount....	\$68,750,000	137.5	\$50,000,000
Commercial Expenses:			
(a) Fixed Expenses	\$ 1,600,000	100	\$ 1,600,000
(b) Partially Controllable Expenses	1,525,000	117.3	1,300,000
(c) Controllable Expenses.....	825,000	137.5	600,000
Total Commercial Expenses	\$ 3,950,000	112.9	\$ 3,500,000
Percentage of Sales.....	5.75%		7.0%

tionship to this determines the rate of return upon capital. It is always important to maintain a statistical analysis of capital employed serving as an indication of normal capital requirements for a given volume of business, and at the same time as a basis upon which the effectiveness of control over the various investment items may be gaged.

Generally speaking, except that there may be seasonal fluctuations, the amount of capital tied up in working capital items should be directly proportionate to the volume of business. For example, the raw materials on hand should be in direct proportion to the manufacturing requirements: so many weeks' supply of this material, so many weeks' supply of that material, and so on, depending upon the condition and location of sources of supply, transportation, conditions, and so forth. Work in process should be in direct proportion to the requirements of finished production, being dependent upon the length of time required for the material to pass from the raw to the finished state, and the amount of labor and other charges absorbed in the process. Finished product should be in direct proportion to sales requirements. Accounts receivable should be in direct proportion to sales, being dependent upon terms of payment and efficiency of collections. Capital tied up in plant and other fixed assets is, of course, fixed investment, and should be considered in its relationship to factory cost of production.

Standards of capital requirement should be established, repre-

sentative of a normal average operating condition, in terms of their respective ratio to annual sales or annual factory cost of production according to whichever is the more direct relationship. For example, the following hypothetical case may be taken as an illustration:

Investment in Plant and Other Fixed Assets...	\$15,000,000
Practical Annual Capacity.....	50,000 Units
Standard Volume, Percentage of Practical An- nual Capacity	80%
Standard Volume Equivalent.....	40,000 Units
Factory Cost per Unit at Standard Volume....	\$1,000
Annual Factory Cost of Production, at Stand- ard Volume	\$40,000,000
Ratio of Investment to Annual Factory Cost of Production .....	.375

This ratio represents the *standard* of capital requirement for fixed investment.

Similar standards are established for working capital requirements, as illustrated in the following table:

TABLE 33—WORKING CAPITAL REQUIREMENTS

NORMAL AVERAGE REQUIREMENTS		STANDARD OF CAPITAL REQUIREMENTS		
Item	In Relation to	Turnover per Year	Ratio to Sales Annual Basis	Ratio to Factory Cost Annual Basis
Cash	Sales	20 times	.050	
Drafts and Accounts Receivable	Sales	10 times	.100	
Raw Materials, and Work in Process..	Factory Cost	6 times		.16 $\frac{2}{3}$
Finished Product..	Factory Cost	12 times		.08 $\frac{2}{3}$
Gross Working Capital .....			.150	.250
Fixed Investment..	Factory Cost			.375
Total Investment..			.150	.625

BASE PRICE STATED AS PERCENTAGE OF FACTORY COST

The basic pricing policy is expressed in terms of the *economic return attainable*. This must be interpreted in terms of price, and enunciated as the *base price*.

Prices of product should change, in the absense of extraneous considerations, with changes in raw material and labor prices.

The base price should be considered in relationship to cost on the normal average basis. Therefore, as previously stated, the total cost should be estimated on such basis by including with the actual raw material and productive labor cost an allowance for the normal average of uncontrollable or partially controllable expenses. In order to allow for freedom of action with respect to variations in raw material and labor prices, it is not desirable to establish the base price in terms of dollars per unit of product, but rather in terms of percentage of factory cost on the normal average basis.

Assuming *economic return attainable* of 20% as the expression of policy, and employing the standards developed in the foregoing hypothetical cases, the following summary will illustrate the method of price analysis:

TABLE 34—METHOD OF PRICE ANALYSIS

Item	STANDARDS	
	Ratio to Sales (Annual Basis)	Ratio to Factory Cost (Annual Basis)
Gross Working Capital.....	.150	.250
Fixed Investment .....		.375
Total Investment .....	.150	.625
Economic Return Attainable — 20%; Multiplying the Investment Ratios by This, the Necessary Net Profit Mar- gin Is Arrived at.....	.030	.125
Standard Allowance for Commercial Expenses, 7% .....	.070	
Gross Margin over Factory Cost.....	.100	.125%
Selling Price, as a Ratio to Factory Cost, $\frac{1+b}{1-a}$	a	b
		$\frac{1+.125}{1-.100} = 1.250$

Thus, it is found that to derive a return of 20% per annum on capital employed, the net selling price must be 1.25 times the factory cost.

Therefore, *base price*, net to company = 125%.

If there is an average commission to dealers of 20%, the list price at retail would be:

$$\text{BASE PRICE. List } \frac{125}{.80} = 156.25\%$$

BASE PRICE WILL BE CONSTANT

Thus, the *base price* is stated as a percentage of factory cost (on the normal average basis). There will be no change by reason of fluctuating volume and consequent variation in cost. With no change in the assumed *economic return attainable* as representing the basic pricing policy, the *base price* will remain constant unless there is a change in assumed capital turnover.

BASE PRICE IN RELATIONSHIP TO ACTUAL PRICE

The *base price* represents a pronouncement of basic policy, and should be applied in continuing comparisons with actual prices. For example, with a *base price* of 125% applied to a factory cost of \$1,000 per unit an indicated selling price of \$1,250 is arrived at to accord with the pronounced policy. This indicated selling price will be referred to as the *base price equivalent*. General correspondence between prices thus indicated and actual prices established from time to time demonstrates a state of coordination between the pronounced policy and administrative practice, and affords a verification of an expectancy of a given average rate of return upon capital employed. Lack of correspondence, however, does not necessarily constitute a deviation from policy. Production costs are likely to vary continually to a minor extent and selling prices ordinarily cannot be adjusted frequently, so that in establishing selling prices it is necessary to make allowances for estimated tendencies in production costs over a period of time within which a readjustment of selling prices would not be desirable. Moreover, this method of price analysis itself is such as to reflect the desirability at times of pricing product above the *base price equivalent* and at other times below.

It follows, therefore, that at a given time it is not necessarily desirable that the established price shall be in precise agreement with the *base price equivalent*; but it is essential to interpret a lack of agreement as to whether the causes are such as neither to constitute a deviation from policy nor to indicate an erroneous expectation of rate of return attainable on capital employed. An admitted deviation from the pronounced policy requires either a correction of the established price, or a revision of the assumed *economic return attainable*.

MODIFICATION OF BASE PRICE

Contact with actual operating conditions might point to errors of assumption as to normal average rate of plant operation, average capital requirement, and other assumptions and estimates employed in the basic pricing policy. Furthermore, the *base price* will be subject to modification from time to time as the assumed *economic return attainable* may be influenced by a composite of such considerations as the following:

1. Nature of the business, and its state in the progress of development up to what is usually called the point of stabilization;
2. Degree of difficulty in the way of the industry meeting a continued growth in demand, due to limitation of capital or other causes;
3. Productivity of capital in the industry and the influence of rate of return upon price, and the susceptibility of demand to price variation;
4. Availability and economic cost of capital in the case of the individual business;
5. Advantages over existing or latent competition in point of average capital turnover, and in production and distribution costs;
6. Peculiar circumstances having to do with satisfaction of demand and which are unrelated to capital turnover;
7. Good-will in the business.

CONSIDERATIONS INVOLVED IN THE APPLICATION OF THE BASE PRICE

The preceding section has indicated the kind of considerations which may lead to a modification of the *base price*. Apart from this, deviations of actual price from the *base price equivalent* in current periods may be justified by special considerations, of which the following are examples:

1. The necessity of meeting competitive conditions existing at any time, not admitted to be of a permanent character;
2. The necessity of making allowance for any extraordinary circumstances existing with respect to price of raw materials in hand or under contract, or other existing cost abnormalities;
3. Consideration must be given to the probable trend of raw material and labor costs, and allowance made for possible changes over an interval during which no price adjustment is desirable;
4. High prices in periods of high volume with correspondingly low prices in periods of low volume will tend to flatten the production curve, and consequently increase the productivity of capital employed;

5. Low prices are desirable in periods of reduced volume to stimulate demand; but a price cannot be fixed below the *base price equivalent* unless the resulting decrease in profits can be recouped during periods of high volume through the establishment of prices correspondingly higher;

6. It must be recognized that capital normally enjoys a high rate of return in periods of high volume, and that higher prices at such times will intensify the attraction of competitive capital under speculative or ill-advised considerations.

PHASES OF THE PRICING PROBLEM

The method of analysis which has been outlined divides the pricing problem into the following parts:

First—Bearing upon the Matter of Policy:

(a) The question of what has been described as the *economic return attainable*, representing the average annual rate of return which should be expected upon capital employed. This may be said to mark the crystallization of policy.

(b) The question of capital requirement, which may be said to qualify the consideration of policy.

Second—Bearing upon the Matter of Administrative Procedure:

The question of the application of the *base price*. This may be said to afford the coordinating link between questions of policy and of administrative procedure.

A clear appreciation of the individual character and, at the same time, interdependence of these phases of the problem has important results. It facilitates two things:

1. Organized contact with conditions, and interpretation of them, leading to an intelligent enunciation of policy.

2. Effective exercise of authority, within appropriate bounds, on the part of executives who are engaged in the direct conduct of business enterprise.

The supply of capital, whether from retention of earnings or from sale of securities, is dependent upon the promise of a satisfactory rate of return, which in turn is determined by the profit margin in relationship to capital turnover. This relationship is symbolized by the *base price*. A deviation in prevailing price from the *base price equivalent* may afford a practical demonstration that a previously assumed *economic return attainable* is erroneous, and thus lead to a limitation upon the supply of capital for expansion. This method of price analysis, therefore, supplies

the basis of a pricing policy which is, in fact, the embodiment of a financial policy.

4. SHELDON CHAIN STORE COMPANY—FIXING RETAIL PRICE FOR BREAD BELOW THE MARKET

The Sheldon Chain Store Company operated a chain of 800 grocery stores in Chicago and surrounding territory. It purchased the bread sold in its stores from three independent bakeries. The company was unable to secure quantity discounts from the bakeries and was forced to pay the same price as unit grocery stores. In the company's stores, bread was sold mainly as a convenience to customers, and no sales efforts were expended to increase its sale. In 1923, in order to secure a greater profit from the sale of bread, the company established a bakery with a capacity sufficient to supply all its stores. After a study of probable costs, a proposal was made that the loaf which regularly was sold in chain and unit groceries at 11 cents, should be priced at 9 cents and the 8-cent size at 6 cents.

It was possible to sell at the reduced price because the company's cost of production was lower than that of independent bakeries. Modern equipment, which produced economically, had been installed. The bakery was operated as a department of the company's main office and warehouse, with consequent economies in fixed charges, such as those for administration and accounting. The cost of raw materials was low, because purchases were made on a larger scale than those of other bakeries in the vicinity, and cash discounts were taken.

The tentative costs on which the suggested prices were based were accepted as accurate. The Sheldon Chain Store Company owned a portion of the stock of a similar bakery operated in another city. The costs in the latter were used in the compilation of estimates for the new bakery.

The chief advantage to be derived from selling at a reduction of 2 cents per loaf below prevailing prices was the increase in quantity of bread sales to be secured. As a staple commodity with a definitely established price level, bread offered at a decreased price was likely to attract purchasers. The management of the Sheldon Chain Store Company estimated the probable increase in bread sales to be one-third of the quantity for-

merly sold. The company was willing to sell at one-half the percentage of profit on each loaf realized by independent bakeries, because of the increase in sales which, it was believed, would result from the lower price charged.

Introduction of a new brand of bread, furthermore, was facilitated by a reduced price. The bread purchased from bakeries had been sold under trade-marks developed by the bakeries and well known to the public. Purchasers were unlikely to demand an unknown brand unless interested by a special price inducement. At a low price, bread might be used as a leader to attract new customers to the stores, which were located in neighborhood shopping centers.

In opposition to the proposal, it was pointed out that if the price were fixed at the prevailing level, an increased percentage of profit was to be realized. The company was confident that its bread equaled in quality any other brand on the market, because it was made according to the formula used successfully in the other bakery.

Full value could be given the buying public if the retail prices were fixed at 11 cents and 8 cents. Although the introduction of a new brand at the established price was difficult, aggressive sales efforts (such as substitution for established brands when possible, special displays in stores, and advertising campaigns) might be used to develop demand for the bread on a quality basis. Such an appeal was more likely to be permanent than one based on price.

A possible result of a low price was that competitors might reduce their prices to the same level. In this event, the company might be forced to adopt aggressive sales methods in order to secure sales for the unknown brand. It was urged that active sales efforts be instituted at the start, without a reduction in price, so that the possibility of active competition on a lower price level might be eliminated.

The officers, however, were of the opinion that none of the competitors could sell bread at the low prices mentioned. Since an increased volume of sales could be secured by reduced prices, it was decided to sell the 11-cent size for 9 cents and the 8-cent size for 6 cents. During the first week in which the new brand was supplied to the stores, the total quantity sold increased 55% above the sales of previous weeks.

5. LESTER CIGAR COMPANY—REDUCTION OF PRICE IN ORDER TO INCREASE VOLUME OF SALES

The hand-made cigars which were produced by the Lester Cigar Company were sold under the well-advertised brand name, Lester, and had a reputation for high quality. Sales were made within a radius of 150 miles from the metropolitan district in which the factory was located, and in 1921, the total volume was approximately 35,000,000 cigars.

About one-third of the total output of cigars was sold directly to retail stores, and the remainder through wholesalers. The company filled orders from both wholesalers and retailers for a minimum quantity of 1,000 cigars. During 1921, and the first half of 1922, the price to all purchasers was \$106 per thousand, less 10%. In June, 1922, a reduction in labor cost was secured, and other costs were lowered slightly. It was suggested to the officers that a decrease in list price could be made without changing the quality, and that an increase in sales might result from the change.

The retail price was not uniform, but depended upon the keenness of competition among retailers. Within the metropolitan district, those who purchased directly from the manufacturer sold the cigar for 11 cents. Other retailers, who bought from wholesalers, sold it for 12 cents, and in the outlying districts, the price charged by retailers was 13 cents or two for 25 cents. Wholesalers sometimes sold to retailers in the metropolitan district at the rate of \$106 per thousand, less 2% cash discount, and the retailers sold the cigars for 11 cents. Since competition was active, the margin of profit made by both wholesalers and retailers was low. It was profitable for them to carry the line, however, because of the well-developed consumer demand for it.

It was the experience of the company that an increase in sales resulted from a decrease in price, and that advanced prices lowered the volume of sales. After an increase in price from \$98 to \$106 per thousand in the summer of 1920, the yearly volume sold declined from 38,000,000 to 35,000,000. Sales during the first five months of 1922 were at the rate of only 27,000,000 per year.

It was suggested that the list price be lowered from \$106 per thousand to \$100. A price of \$100 per thousand, less 10%,

allowed those who bought directly from the manufacturer to sell Lester cigars for 10 cents. This was an important advantage because consumers preferred to pay with a single coin. A purchaser did not like to receive 4 cents in change, if he lacked a 1 cent coin, and for this reason often bought a 10-cent cigar in preference to the one that cost 11 cents. Although the total decrease in cost did not equal \$6 per thousand, the reduction in labor cost was \$3 per thousand cigars, and economies in other expenditures had been made. It was expected that by the suggested decrease in price the volume could be increased to approximately 30,000,000.

Machine-made cigars which competed with the Lester brand were priced normally at \$4 per thousand lower than the latter, and were sold at 10 cents by a few of the retailers and chain cigar stores which sold at cut prices. There was, furthermore, likelihood of a decrease in price by competing cigar manufacturers. A reduction in price was desirable in order to meet this competition.

No change in the retail price was probable in the outlying districts, where competition was less active. This allowed retailers an increased profit as a stimulus to greater sales efforts in the disposal of Lester cigars. The officers were uncertain, however, as to what proportion of retailers might absorb the additional margin as profit and what proportion might reduce the price by 1 cent.

On the other hand, it was not certain whether a sufficiently increased quantity of sales could be obtained to yield an equal or a greater amount of profit than was realized at \$106. It was also problematical how great an increase would be secured if all competitors reduced their prices.

A reduction of 1 cent in price decreased the retailer's margin of profit, because the reduction by the manufacturer was only .6 of 1 cent. Although this might affect the willingness of retailers to cooperate in securing a wide distribution for Lester cigars, the officers depended more on advertising to the consumer and on the high quality of the cigar to offset such an attitude on the part of dealers.

The officers decided to reduce the list price to \$100, less 10%, because they expected greater earnings to result, despite the reduction in percentage of profit.

6. WODEN COMPANY—AUTOMOBILE TIRE PRICES FIXED TO AGREE WITH THOSE OF COMPETING BRANDS

In 1921, the Woden Company, which produced rubber footwear, introduced the Woden automobile tire. The initial rate of production was 50 tires per day, and since they were of high quality, they competed with the best tires sold. It was suggested to the president, who was establishing a price policy, that the price for Woden tires should be maintained equal to the price for Carleton Cords, which was one of the competing brands.

The rubber footwear manufactured by the Woden Company was known nationally for its high quality. In 1915, two of the company's principal competitors in rubber footwear began the production of automobile tires. In the severe price competition in rubber footwear which occurred during the following years, the Woden Company was placed at a disadvantage because it lacked the profits that competitors secured from tires. Demand for tires increased rapidly, and all tire companies realized liberal profits. In 1918, the Woden Company began experiments for the development of a tire. The product was perfected in 1921. It was proved by tests that the wearing qualities of the tire were at least the equal of any tires then produced. The Woden tire possessed the exclusive feature of a tread that resisted punctures and had long wearing qualities.

The method of distribution adopted was that of exclusive retailers. In this way, the company sought to develop a demand for its tire and to relieve retailers from the ill effects of price-cutting. An appropriation of \$150,000 was made for advertising, in which quality was to be featured rather than price.

The president recognized that tire prices were determined by the four principal manufacturers in the industry, who sold a majority of the tires. It was especially difficult to introduce a new brand of tire at prices which exceeded those of established brands. As a result of keen competition among retailers, indiscriminate price-cutting existed, and sales were secured by them largely through offering reduced prices. The Woden Company's cost of production prevented low prices. The president, furthermore, sought to establish Woden tires on the basis of a quality appeal rather than that of low price. He realized the necessity for an approximate agreement of Woden prices with the prices of the principal manufacturers.

It was suggested that Woden tire prices duplicate exactly those of Carleton Cords, because the latter had an excellent reputation among motorists. If the price was in constant agreement with that for a tire with an established reputation, buying resistance from retailers was reduced. In securing retail distributors, emphasis could be placed by the salesmen on the exclusive features of the tread and on high quality. It was reasonable to expect the retailer to pay prices as high as those of a tire of equal quality. The company made no suggestions concerning resale prices.

The price for $30 \times 3\frac{1}{2}$ -inch Carleton Cords and for other brands allowed a lower margin of profit to the manufacturer than did other sizes. Competition for sales of the $30 \times 3\frac{1}{2}$ -inch size was more active than for the other sizes because of the greater volume sold. The president estimated that sales of tires of that size would constitute half the company's total volume, and he was unwilling to sell at the established price.

The chief disadvantage was that price changes of the Carleton Tire Company might not be announced at the same time as those of other companies. This would prevent the Woden Company from securing the benefits of being either among the first companies to reduce prices or among the last companies to make an advance. If the price was the same as that of a popular brand, however, the company was assured that its prices at all times were neither excessive nor too low. Price changes in Carleton tires could not be anticipated by the Woden Company, and it was unable to prevent losses on declines or give advance notices of increases to retailers. An excessive stock or decline in demand might cause the Carleton Company to reduce prices when similar conditions did not exist in the Woden Company. On the other hand, the company was forced to make changes equal to those of other tire companies because of their controlling position. It was possible that Carleton tires might lose their superior prestige, and that it would become necessary to select another tire as the leading brand.

The officials of the Woden Company decided to establish the policy of maintaining an agreement of price between the Woden tire and Carleton Cords. The price for $30 \times 3\frac{1}{2}$ -inch Woden tires, however, was to be from 5% to 10% higher than the price for Carleton Cords of that size.

7. LIPTON COMPANY—YEARLY CONTRACTS IN THE IRON ORE TRADE

The Lipton Company, located in Buffalo, was a selling agent for iron ore mines in the Lake Superior ranges. In addition, it had mines of its own. From 10% to 15% of the ore mined in this region was sold by the company and brought down the lakes in its own boats to Lake Erie ports for delivery by rail freight. The sales contracts with customers were made by the selling agent, together with arrangements for deliveries and collections.

It was customary in the iron ore trade for buyers to contract during April or May for a substantial part of a year's needs. It was necessary to bring down all of the ore during the season when the lakes were free from ice, from the last part of April or early May to the first part of December. Since it was impossible for a steel company or blast furnace to forecast accurately for a year in advance what the demand for its products would be, and, therefore, its own requirement for ore, it usually contracted for the quantity of ore which it expected surely to use and relied on being able to purchase the remainder as the season progressed. In years when the demand for ore was comparatively slack, it was possible to purchase ore without paying excessive prices any time before navigation was closed. In years of marked business activity, however, it was not easy to purchase ore in addition to the amount contracted for in the spring, since the mines usually had sold practically their entire capacity on yearly contracts. Prices were quoted by the mines in the spring to apply to all ore brought down under contract during the season. All sales agents quoted identical prices on specific grades of ore from the same range.

Some of the larger blast furnaces and steel companies had their own mines and secured a portion of their supply in this manner. Smaller companies whose extent of operations did not justify owning mines occasionally made long-term contracts of from 2 to 10 years with selling agents for a portion of their requirements. The advantage of this to a small company was that it secured slightly lower prices than it could obtain on yearly contracts. This enabled the company to compete more successfully with the larger blast furnaces and highly integrated steel companies.

Inasmuch as most buyers could not use all of the ore purchased on yearly contract at the time it was brought down, it was customary for the selling agents to arrange for storage at the docks.

In this case deliveries and payments were made in 12 equal monthly instalments. If the customer desired to increase his deliveries from the docks, his monthly payments were to be increased by a corresponding amount. For storage service the following charges were made by the dock owners:

Twenty cents per ton handling charge from the vessel to the dock stock pile;

One cent per ton per month storage;

Thirteen cents per ton handling charge from dock stock pile to railroad car.

Occasionally a customer had the necessary storage space and requested immediate delivery without storage at the docks. In this case, a handling charge of 8 cents per ton was made by the docks for loading directly from the vessel into a railroad car. Payments were required as the deliveries were made.

An example of the form of yearly contract between the selling agent and its customers for non-Bessemer ore appears on page 434. The actual price paid by the customer differed from the base price quoted in the contract in the same proportion as the actual metallic iron content varied from the standard guaranteed.

This method of making yearly contracts was desirable for the mines in order that they might have a basis for scheduling operations. For the purchasers of ore, however, the plan was not so favorable. The iron and steel industry was noted for its sensitivity to cyclical influences; it was impossible for steel companies or blast furnaces to forecast accurately their needs for a year in advance. The demand for steel products might be substantially greater or less than was indicated at the time the contracts were made in April or May. It was difficult for users of iron ore to avoid occasionally purchasing a quantity of ore in excess of the year's needs. During the periods of business depression following periods of extreme business activity, such as 1907 and 1908, when prices decreased rapidly, users of iron ore were forced to take heavy losses as the result of the contracts that had been made. The mines and their selling agents often were willing to cancel the contracts if the ore had not been brought down from the ranges; but if the ore had been brought down no cancellations were allowed, unless the fulfilment of the contracts would result in financial ruin to buyers. In such instances, the mines and their selling agents underwent heavy losses as the result of having title

to ore which was declining in price. The number of such cases was not as large as might have been expected, because the steel industry was integrated to a large extent. The working capital of such companies, therefore, was large when compared with the size of commitments for ore.

Should the Lipton Company in April, 1920, have discouraged its customers from undertaking yearly contracts?

NON-BESSEMER
ORE CONTRACT

Executed in

AGREEMENT, Between
of by its agent, The Lipton Company, of
Buffalo, New York, party of the first part, and
party of the second part made at
Buffalo, New York 1921.

WITNESSETH: That said first party for the considerations herein named, hereby agrees to sell to said second party

gross tons (2,240 lbs.) of iron ore from the mines of said first party in County of the grade or kind known or designated as , all of said ore to be of the average standard quality of said grade shipped from said mines during the year to be brought down by vessel, and to be delivered from the docks of or as may hereafter be mutually agreed upon, provided always that in case the parties operating said docks fail to receive and handle said ore promptly, said party of the first part may deliver said ore from any dock which can make deliveries to the works of said party of the second part; in about equal amounts monthly, during the months of payment hereinafter specified on board cars of

on condition that payments therefor shall be promptly made in the amounts, at the rate and times hereinafter named, and that railroad scale weights at port

or ports of delivery shall be accepted by both parties as finally determining amount of ore delivered.

In addition to the right of first party to place, on docks at port of delivery, ore, payment for which has not theretofore been fully made, the first party shall, at all times, have the right to place ore on said docks, in order to prevent delay in unloading vessels due to car shortage or other cause.

The price of this ore is named and accepted on the expectation that the ore will average per cent in metallic iron in its natural condition. Taking this as the standard of quality, it is agreed that any total average variation therefrom in metallic iron shall be entitled to recognition and adjustment by increase or abatement in price, as the case may be, at the rates per unit, per ton, hereinafter specified.

When this ore contains 50 per cent, or more, of metallic iron, the value per unit or fraction thereof is at the rate of _____ known as the base unit value; when less than 50 per cent, but not less than 49 per cent, for such unit or fraction thereof of decrease only, said base unit value shall be increased at the rate of one-half thereof; when less than 49 per cent but not less than 48 per cent, for such unit or fraction thereof of decrease only, said base unit value shall be increased at the rate of 100 per cent thereof; when less than 48 per cent, the value shall be at the rate of _____ cents per unit or fraction thereof.

On arrival at port of delivery, each cargo is to be sampled and analyzed by _____ The Car-Ryder Co., The Phillips Co., The Murray Co., or such other independent chemists as may be mutually agreed upon, and said analyses shall be final and the basis of settlement hereunder. The analysis governing this contract shall be the total average of all analyses of all cargoes or portions of cargoes of _____ ore delivered to said second party from or over the docks from which deliveries on this contract are made; the cost of sampling and analyzing to be equally divided between, and paid by, the parties hereto.

SECOND PARTY AGREES to purchase said ore; to receive the same when and as delivered as aforesaid; to pay all charges for unloading, dockage, storage, reloading, switching and handling at port or ports of delivery, except that part of the unloading charge, (from the hold to the rail of the vessel), which has been customarily charged by the docks to the vessels delivering the ore; to reimburse said first party for moneys paid for taxes by said first party due to the presence of said ore at port of delivery, and to pay said first party in cash for said ore, per gross ton (2240 lbs.) at the rate of _____ dollars and _____ cents (\$) per ton, in equal payments of \$ _____ each, payable on the

day of May, June, July, August, September, October, November, December, 19_____, and January, February, March, and April, 19_____, making a total of _____

dollars, which said payments are to be promptly made, whether said second party is able to receive said ore or not. Monthly deliveries of ore from docks to be in proportions covered by said monthly payments, and if said second party desires deliveries to be increased, payments are to be increased correspondingly. Failure by said second party to make payments promptly when due shall, at the option of the first party, excuse refusal to make further deliveries.

After May 1st, 19_____, said second party has the privilege of anticipating and discounting any or all of the above mentioned payments at the rate of _____ per cent (_____ per cent) per annum.

It Is EXPRESSLY agreed that said first party shall not be held liable for damages resulting from failure to deliver all of said ore hereunder, if prevented or obstructed by war or insurrections, combinations, strikes, hindrances, turnouts; accidents or delays at the mines, on the railroads or docks, or in transit; or by disasters of navigation, governmental interference or other causes.

beyond its control, or by failure of said mines to produce sufficient ore to fulfil this and all other sales contracts, provided that all its sales contracts for such ore shall not, at any time, exceed, in the aggregate, the quantity which its officers estimate can reasonably be expected to be produced and delivered thereunder.

Provided when any such shortage is ascertained, first party shall so apportion further deliveries on this and all other sales contracts then unfulfilled, that all purchasers shall receive as nearly as may be their pro rata share of the aggregate shipments of said ore of the season 19 . Any undelivered balances resulting from such shortage shall be canceled.

.....
.....
By..... Agent
.....

8. WALDEN COMPANY—LONG-TERM CONTRACTS IN THE IRON ORE TRADE

The Walden Company, located in Buffalo, was a selling agent for iron ore mines in the Lake Superior ranges. In addition, it had mines of its own. From 10% to 15% of the ore mined in this region¹ was sold by the company and brought down the lakes to Lake Erie ports in its own boats for delivery to customers by rail freight. Terms of sale, arrangements for delivery of ore, and collections were made by the selling agent.

It was customary in the iron ore trade for buyers to contract during April or May for a year's needs. This custom of making yearly contracts provided the mines with a basis for scheduling operations. All of the ore had to be brought down during the season when the lakes were free from ice, from May until December. The selling agent agreed in the contract to deliver the ore to the buyer in equal monthly instalments, and the buyer agreed to make payment on the same basis. The buyer was allowed to demand more rapid deliveries on condition that he make payments accordingly. The ore was stored on the docks² until the time for delivery, since the storage space required was so great that most blast furnaces or steel companies did not have the necessary facilities.

A steel company or blast furnace customarily purchased only a portion of its year's supply by contract, because it was impossible for such a company to forecast accurately for a year in ad-

¹See Table 35, page 440.

²See Table 36, page 441.

vance what the demand for its products would be and, therefore, its own requirements for ore. Subsequent purchases were made in the open market as the needs of the company became apparent. Many of the large integrated steel companies and some blast furnaces had mines of their own from which they derived a portion of their supply of ore. Several smaller steel companies and blast furnaces did not have sufficient capital to do this, and the extent of their operation was not great enough to make it practical. In order better to compete with the companies which had their own sources of ore supply, these smaller companies sometimes made long-term contracts, of from 2 to 10 years, with a selling agent for part of their ore needs. The advantages of such a policy were twofold: first, it insured such companies an adequate supply of ore; and second, it virtually insured them lower prices than they could have obtained on yearly contracts and thus aided them to meet competition. The small companies having long-term contracts purchased additional ore during the period by yearly contract or on the open market.

This form of contract enabled the mines to plan their operations in advance, and insured them minimum deliveries each year. It made it possible for them to mine and deliver ore in years when it was difficult to meet fixed charges as the result of small sales. These contracts usually provided for the benefit of the purchaser for maximum and minimum deliveries in each year, the exact amount to be specified by the buyer near the beginning of the shipping season. The spread between the maximum and minimum quantities was made narrow to protect the mines against wide fluctuations in the quantities of ore to be delivered under these contracts. The difficulty, for both buyers and sellers, with this system of long-term contracts was that of fixing a price basis that would remain fair to both parties to the agreement over a period of time.

The Walden Company had made long-term contracts based on several methods of fixing prices. The actual method determined upon for any contract was the result of negotiation between the selling agent and the buyer. It was impossible for the selling agent to restrict long-term contracts to any one specific price basis. The executives desired to weigh the merits of these different methods to determine which was most favorable. They proposed to negotiate for this plan in conferences with customers.

The following is a typical example of the problems arising in connection with the making of long-term contracts. In the spring of 1922, the Walden Company was approached by a small steel manufacturer who desired to contract for approximately 40,000 tons of ore yearly for five years. When this company operated at capacity, it used about 75,000 tons per year. A long-term contract for about 40,000 tons, therefore, would supply the main part of its ore purchases. The maximum and minimum quantity of yearly deliveries were set at 50,000 tons and 30,000 tons, respectively. This manufacturer desired non-Bessemer ore from the Mesaba range.¹ A method frequently used gave the buyer a reduction of a fixed amount from the yearly contract price of ore quoted each year. The yearly contract price in the spring of 1922 for this ore at a Lake Erie port was \$5.55 per ton. This was the base price which would differ from the actual price to be paid according to the percentage of metallic iron content of the ore. For a five-year contract of this size and for this type of ore the Walden Company was willing to give a discount of 13 cents per ton from the yearly contract price prevailing in any of the years during the term of the contract. This method of arriving at a long-term contract price did not protect the buyer against fluctuations in the yearly contract price. It was favorable to the selling agent because it guaranteed a price for the ore during the life of the contract only slightly below that of the yearly contract prices.

A second method used by the Walden Company was to arrange a sliding scale of discounts from market prices, as they varied from time to time. As the price per ton of ore increased, the discount specified in advance was increased. This method protected the buyer with the long-term contract to some extent against high market prices. The method further provided a specified market price below which the discount remained fixed. This minimum discount in practice was somewhat less than the flat discount given under the first method. Therefore, although the second method was of greater advantage to the purchaser in times of high prices than the first method, it was less advantageous in times of low prices. For the contract desired by the above steel company, the Walden Company was willing to quote the following prices:

¹See Table 37, page 442.

YEARLY CONTRACT PRICE

\$5.00 per ton or less—	10 cents discount
5.00 to \$5.50 per ton—	12 cents discount
5.50 to 6.00 per ton—	14 cents discount
6.00 per ton and over—	16 cents discount

A third method frequently used was that of quoting a flat mine price for the entire term of the agreement. Prior to 1916 the company had made long-term contracts at a flat price delivered at a Lake Erie port. In the following years, however, changes in freight rates and costs of lake transportation had varied to such an extent that the company no longer used this method of quoting prices. The flat mine price, however, was quoted in some instances. This method was suitable only for ore from open-pit mines, since the cost of that type of mining varied little and could be ascertained with accuracy in advance. In open-pit mining the earth was stripped from the surface until the layers of ore were reached. The cost of the stripping operation could be approximated closely in advance, and the extent and location of the ore bodies could be determined accurately. The cost of labor and supplies was approximately 20% of the total cost of mining; the remaining 80% was for overhead, royalties, depletion, and other fixed charges. Of the 20% for labor and supplies, 66% was for labor and 34% for supplies.

No accurate approximation of production costs could be made in advance for ores extracted by underground mining. Furthermore, the percentage of labor to the total cost was extremely high, and neither wages nor labor efficiency could be forecast accurately. It was not customary, therefore, for the Walden Company to quote flat mine prices on long-term contracts for ore extracted from underground mines. Even for open-pit mining the possibility of errors in forecasting changes in the cost of labor and supplies made this form of agreement somewhat hazardous for both the mines and the customers. If this form of contract was agreed upon, the selling agent quoted a higher price per ton than under some other methods in order to protect the company. If the steel company desired to make its contract based on this method, the Walden Company would have quoted \$3.45 per ton. In addition to the flat mine price the customer would have to pay the amounts for freight, cargo insurance, shipping, and taxes which are shown in the following table:

Mine price	\$3.45
Rail freight from mines to shipping port.....	.91
Cargo insurance .....	.05
Shipping charges .....	.93
Taxes .....	.10
Total	\$5.44

The fourth method of determining prices was for the Walden Company to agree to supply the buyer with ore at cost plus a fixed amount. This additional amount was designed to cover capital charges and a reasonable profit. For this method to be satisfactory to purchasers it was necessary that they rely on the accuracy of the accounts kept by the mines and selling agents. The Walden Company allowed long-term contract customers to inspect its books at any time. This method did not allow the selling agents or the mines to take advantage of high prices in times of marked business activity. During such periods, the margin between the market prices and the cost was likely to be greater than during a period of business depression. It would assure them, however, of a profit when sales decreased, when profits otherwise might be inconsequential or lacking. What was an advantage to the seller, however, was a disadvantage to the purchaser. When market prices were low, the purchaser was likely to pay more than the market price. On the other hand, when

TABLE 35—TOTAL IRON ORE SHIPMENTS FROM LAKE SUPERIOR REGION

Year	Tons	Year	Tons
1891.....	7,073,059	1907.....	42,401,588
1892.....	9,080,684	1908.....	26,165,894
1893.....	6,074,888	1909.....	42,779,662
1894.....	7,759,753	1910.....	43,627,629
1895.....	10,441,462	1911.....	32,951,769
1896.....	9,950,541	1912.....	48,310,335
1897.....	12,473,032	1913.....	50,114,927
1898.....	14,037,247	1914.....	32,947,591
1899.....	18,240,716	1915.....	47,634,443
1900.....	19,167,100	1916.....	66,902,778
1901.....	20,849,705	1917.....	64,694,636
1902.....	27,880,806	1918.....	63,024,220
1903.....	24,535,569	1919.....	48,720,325
1904.....	21,976,837	1920.....	60,531,467
1905.....	34,574,255	1921.....	22,851,805
1906.....	38,687,286	1922.....	44,015,530

TABLE 36—IRON ORE STORED ON LAKE ERIE DOCKS

Year	Ore on Docks May 1 (Tons)	Ore on Docks December 1 (Tons)
1891.	2,662,223	3,508,489
1892.	1,537,188	4,149,451
1893.	2,095,797	4,070,710
1894.	2,588,370	4,834,247
1895.	2,642,980	4,415,712
1896.	1,949,698	4,954,984
1897.	3,256,497	5,923,755
1898.	3,167,915	5,136,407
1899.	2,073,254	5,530,283
1900.	1,720,656	5,904,670
1901.	3,050,183	5,859,663
1902.	2,848,194	7,074,254
1903.	3,592,367	6,371,085
1904.	4,534,103	5,763,399
1905.	2,271,631	6,438,967
1906.	1,766,329	6,252,455
1907.	1,976,988	7,385,728
1908.	5,480,300	8,441,533
1909.	5,370,268	8,965,789
1910.	5,278,251	9,804,264
1911.	6,676,820	9,270,341
1912.	5,717,801	10,053,836
1913.	5,456,774	9,250,500
1914.	5,019,717	8,375,014
1915.	5,886,412	8,812,499
1916.	3,311,399	9,958,306
1917.	4,772,232	10,023,743
1918.	5,624,587	10,376,509
1919.	5,686,188	10,454,843
1920.	6,204,556	10,955,868
1921.	8,093,854	9,032,595
1922.	6,988,878	9,899,313

market prices advanced to high levels, he secured comparatively low prices. For the steel company referred to above, the Walden Company would have quoted 40 cents as the amount to be added to cost. In the spring of 1922 the cost of ore delivered at a Lake Erie port was approximately \$5.

A fifth plan, sometimes used, was to quote a mine price which varied proportionately with the costs of common labor. If the price of labor rose 10%, for example, the mine price was raised

TABLE 37—LAKE ERIE PRICE PER TON OF NON-BESSEMER MESABA ORE, 1900 TO 1923

Year	Price per Ton	Year	Price per Ton
1900.....	\$4.00	1913.....	\$3.40
1901.....	2.75	1914.....	2.85
1902.....	2.75	1915.....	2.80
1903.....	3.20	1916.....	3.55
1904.....	2.50	1917.....	5.05
1905.....	3.00	1918 (To July 1)	5.05
1906.....	3.50	1918 (July to Oct. 1)	5.50
1907.....	4.00	1918 (From Oct. 1)	5.75
1908.....	3.50	1919.....	5.55
1909.....	3.50	1920.....	6.55
1910.....	4.00	1921.....	5.55
1911.....	3.50	1922.....	5.05
1912.....	2.85	1923.....	5.55

10%, and the freight charges were added to this. If the contract with the Buffalo steel company were made on this basis, the prices would have been approximately as follows: The total cost at the mines approximated \$3. Of this, labor and supplies then would have been about 60 cents, of which labor was 40 cents. In the spring of 1922, the Walden Company quoted \$3.40 as a mine price to which freight and other charges would have been added. During the remainder of the contract the mine price quoted was to bear the same relation to \$3.40 as the common labor cost per ton bore to 40 cents.

It was evident that whatever price basis was decided upon, approximately the same price per ton during the first year of the contract was quoted to the customer. In subsequent years, the prices would vary with conditions according to the method employed.

What method of quoting prices in long-term contracts should the Walden Company have endeavored to secure in its negotiations with customers?

9. CLAYTON POTTERY COMPANY—PRICE POLICY

The Clayton Pottery Company produced cooking china for hotel, restaurant, and dining-car use, and to a lesser extent for use in homes. The features of the product were its unusual heat-resisting qualities and the fact that it was difficult to break. The company did not produce table china.

Ninety per cent of the domestic production of this type of china used in the United States was manufactured by the Clayton Pottery Company. Only one other company in the United States produced similar pottery for the same purpose, and its production costs were materially higher than those of the Clayton Pottery Company. It, therefore, did not offer keen competition. European pottery manufacturers from time to time shipped similar high-grade cooking pottery to the United States. Large quantities of this pottery had been imported in 1919 and 1920. During 1921 and 1922, however, such imports were comparatively unimportant and the Clayton Pottery Company virtually had a monopoly of the supply of this china in the United States.

During the period of 10 years previous to 1915, the price of Clayton pottery seldom was changed. From 1915 to 1920, however, the advancing cost of labor and supplies led to the increase of prices at frequent intervals. Quotations in 1920 were approximately 100% higher than in 1915. Many of the company's customers objected to the high prices and urged other pottery companies to attempt to produce similar china. In 1921, when wages and the cost of supplies had declined, prices were reduced about 17%. In October, 1922, wages were reduced 5%. The executives were uncertain whether or not a further reduction in prices should be made.

Sixty-two per cent of the cost of producing Clayton pottery was for labor and supplies. It was the policy of the company to pay liberal wages. From 1915 to 1920 wages had increased 100%. After the reduction in October, 1922, they were approximately 60% above those in effect in 1915. The Clayton Pottery Company maintained an open shop, but the unions were so strong in this section that there were few employees who were not members. The work did not require great skill, and an employee in the pottery works could become a skilled workman in eight to twelve weeks. Abundant labor was available; therefore, the union could not force the company to pay unduly high wages.

The majority of the china to be used in hotels, restaurants, or dining cars was sold to wholesale distributors. There were so few of these in the United States that the company employed only one salesman, who also was one of the chief executive officers. A small quantity of the china, principally teapots, was distributed directly to department stores.

The advantage that the Clayton Pottery Company had over its one competitor resulted primarily from the fact that the Clayton Pottery Company gave its product only one baking. The executives of the company stated that their product was admitted to be superior to any other domestic cooking china on the market. The superiority was the result of long experience in its production and the special knowledge of the proportions in which the different varieties of clay should be mixed. The company had no patents on its process. The clay was mixed with water, molded, dipped in color, dipped in a glazing compound and then baked from 48 to 72 hours. The company's competitor, who also produced china for table use, employed manufacturing processes usual among pottery manufacturers. The clay was baked after it had been molded, then the pieces were dipped into color and into a glazing compound and baked a second time. This double baking process added to the cost. Several companies had attempted to bake the china only once, but were handicapped by their lack of knowledge and experience in the process. All but one of the companies, which had attempted to produce cooking china by either of these processes, had given up after a short period.

The executives of the company had not considered seriously the possibility of producing table china. The process of manufacturing satisfactory china for this use was somewhat different, and that phase of the pottery industry was more competitive. The Clayton Pottery Company was satisfied to continue merely the manufacture of cooking china. Because of the pre-eminence in this market and the satisfactory profits attained, the executives did not desire to adopt a new policy which might entail numerous difficulties.

The general price policy of the Clayton Pottery Company had been to quote prices as high as possible without incurring too vigorous complaints from the wholesalers, or allowing other companies successfully to market competitive china. The point of stabilization that had been reached gave the Clayton Pottery Company a net profit of approximately 15% on sales.

The company was obliged to consider possible sources of competition in connection with questions of price policy. First, there was the possibility of more active foreign competition. The service that a domestic company could render to its customers, however,

gave it a decided advantage over foreign competitors. It usually had not been profitable for foreign manufacturers to ship pottery to the United States unless they could offer it at prices much lower than those quoted by domestic companies. The executives estimated in October, 1922, that foreign manufacturers could not quote prices below those of the Clayton Pottery Company. They were of the opinion, therefore, that there was little danger, at that time, of any substantial foreign competition.

Second, there was the competition of cooking containers made of enamel or aluminum, which cost only one-half as much as Clayton pottery. Enamel or aluminum, however, were not as satisfactory for cooking purposes; moreover, hotels, restaurants, and dining cars preferred to use china. There was a possibility that enamel or aluminum pieces might be substituted, however, if the Clayton Pottery Company quoted prices much more than 100% above those of these competing products.

There was also a potential source of competition in earthenware pottery. The price of these products was even lower than that of enamel. They were easily breakable, however, and furthermore were porous and tended to absorb the flavor of foods cooked in them.

The executives stated that the pottery industry, particularly that phase of it with which the Clayton Pottery Company was connected, was not so susceptible to fundamental changes in business conditions as were most industries. Sales in 1921 and 1922 had continued to be excellent, and the executives did not expect a decrease in demand. Nevertheless, they were of the opinion that there might be some advantage in reducing prices. If the Clayton Pottery Company was to maintain its supremacy in the production of cooking china, it was necessary that the good-will of the company's customers be retained. A reduction in prices at this time might increase their feeling of good-will.

The company could reduce its prices and still maintain a profit. In 1915, the price per dozen of one grade of Clayton teapots was \$3.50. In 1920, this price had advanced to \$7.25, and in 1921 had been reduced to \$6. The equivalent price of enameled teapots at this time was \$3.50 and of earthenware teapots \$2.50. It would have been impossible for the Clayton Pottery Company to reduce its prices enough to compete with enamel, aluminum, or earthenware pieces on a price basis. There was the possibility,

however, that if a price reduction were made sales might be increased, principally by selling china to people who had used enamel or earthenware pieces. It was unlikely that sales could be increased to hotels, restaurants, or dining cars since they already were using high-grade china and their demands showed little variation.

If high prices were maintained, new competitors might enter the market. Inasmuch as the Clayton Pottery Company had no patents or other means of protecting its position, it was quite possible that such competitors would be successful in developing manufacturing processes like those of the Clayton Pottery Company, provided they were strong enough financially to operate with no profits or at a loss for a short term of years. Moreover, it was impossible to tell when foreign competitors might enter the domestic market.

Should the Clayton Pottery Company have reduced its prices in October, 1922?

10. KENDALL & FROST, INCORPORATED—ELABORATION OF STYLES IN A PERIOD OF BUSINESS DEPRESSION

Kendall & Frost, Incorporated, manufactured plain and conservative styles of men's shoes, which it distributed under its own brand to retail dealers. After the deflation of business in the summer of 1920, there was a marked decline in the demand for the company's products. Complete stagnation occurred in the shoe industry, as in many other industries, and the paramount question before the management of the company was how, if at all, a demand for its products could be established. It was suggested that since shoe styles had not been changed for several years, a development of new and original models might aid in building up the demand. The management, therefore, had to decide whether it was advisable to develop and attempt to sell new styles of shoes, or whether it should turn all its efforts to the disposal of the surplus stocks of returnable merchandise.

The situation in the shoe industry, for several seasons previous to May, 1920, had been one of prosperity. Factories had been operating at full capacity, and the manufactured shoes had been taken immediately by the retailers. While the retail distribution had been excellent, it had been hardly equal to the

volume of production; that is, retail shoe dealers had accumulated merchandise stocks because the steadily increasing prices had led them to believe that the more stock they had, the more profit they had made. Each time an inventory was taken, the merchandise had a higher value than before. The few prevailing styles were those which existed during the war, when the Government requested shoe manufacturers to simplify styles as far as possible. During the seasons which followed the war, the shoe manufacturers had sold their products so easily that it had not been necessary to develop new styles.

After the break in prices, shoes became unsalable at a profit. Retailers were stocked with high-priced merchandise which they were forced to sell at a fraction of cost. The effect of these reduced prices on the consumers was generally the opposite of that desired. Inasmuch as consumers were of the opinion that prices must return to pre-war levels, they refused to purchase.

The result of the depressed condition of the trade was serious for the shoe manufacturers. Shoe factories were without orders or were running on short time. Many factories were closed which never had been closed before. The manufacturers were burdened with high-priced inventories and surplus stocks, for which there was no demand. Since retailers were overstocked to such an extent that they were unwilling to accept merchandise at any price, many manufacturers opened retail stores in large cities, where the shoes were offered to the public regardless of cost. Unemployment was the general condition in manufacturing communities, and shoe companies were sustaining constantly increasing losses from depreciation and fixed charges.

The attitude of retailers toward changes in the existing styles was uncertain. They were likely to take the position that by further additions to their stocks they were increasing their difficulties and that the development of new styles might draw the few remaining customers away from the old stocks. There was the possibility that the new styles, by attracting all the demand, would remove the value from the old stocks. The unsalable stocks which resulted from this situation might cause serious financial difficulties and failures among retailers.

The management of Kendall & Frost, Incorporated, was of the opinion, however, that in the development of new styles of

shoes there were important advantages both for the manufacturers and the retailers. Manufacturers and retailers were generally so overstocked that with the prevalent lack of purchasers months might be required to absorb the surplus goods. The management realized that the prevailing styles of shoes no longer appealed to consumers and it was convinced that a new demand could be created and built up by the development of new models. Not only was a radical departure from existing styles certain to arouse the interest of consumers and thereby stimulate sales, but the old stock also could be sold gradually to customers who preferred conservative styles. The new models, moreover, were expected to serve as an attraction; in many cases customers drawn primarily by the display of new styles might decide to purchase the conservative models offered at reduced prices. There was little probability of the demand centering on the new lines to the exclusion of the old stock.

A further advantage was that the new models could be sold at a profit to the retailers, since the selling appeal was to be style and not price. Instead of waiting to make replacement purchases only, consumers were likely to buy the new shoes in order to keep up-to-date. Although the prices at which it was possible to manufacture and distribute the new models were somewhat higher than the reduced prices on existing styles, they were not exorbitant. The profits on these sales assured the retailers of a gradual recovery from their losses and of an improvement in their financial condition.

The proposed changes did not involve important increases in costs. Many variations of shoes with fancy wing tips, perforations, and stitching could be produced with only a few minor capital expenditures required to provide several new attachments for the machines.

The company did not expect purchases of the new lines by the retailers except in small quantities. It proposed to send out its salesmen with new samples to secure conservative orders from as many retailers as possible. It recognized also that it was essential to guarantee satisfactory service in the prompt and frequent delivery of orders until the trade had revived.

The management of Kendall & Frost, Incorporated, decided that it was of no avail to wait for the industry to recover of its own accord, but that the development of new styles of shoes was

advisable as an experiment to accomplish the revival of the trade. If the plan was successful in stimulating sales, the management determined to change the styles of its products at frequent intervals until after the period of depression.

In accordance with the decision, new styles with radical changes were developed in the company's designing department. The salesmen were sent out with these samples and were able to secure a few small orders from retailers who recognized the advantages in the experiment and were willing to give it a trial. Consumers began to buy because the styles were novel and original, and as a result a gradually increasing demand for the new models was developed.

II. GENESSEE COMPANY—DIAMOND PRICES¹

Net sales of the Genessee Company declined from \$761,496 in 1920 to \$486,660 in 1921. This firm was known principally as a wholesale diamond house,² but it also sold Hamilton, How-

¹Copeland, p. 695.

²In the *Jewelers' Circular*, March 29, 1922, the following editorial appeared:

"Financial writers and other authorities outside the industry who have been analyzing the conditions of the diamond trade for the past year or more have been surprised at the strength of the market in face of so many adverse conditions, economic and political. To those not familiar with the full situation, it has seemed most remarkable that the diamond business of the world did not fall to pieces in view of the general conditions. In other lines of industry the factors which determined the price of commodities have tended to produce a decline in value and with the readjustment of its market put them on a new basis far below the levels existing during the war or directly thereafter. With diamonds no such conditions have existed."

"That diamonds (generally considered one of the greatest luxuries) should not have become a drug on the market in view of the straitened conditions of most countries of the world, was something that the superficial investigator could not understand, particularly as in addition to the general world economic conditions, large amounts of merchandise were thrown on the market by the Russian Government as well as by firms in other countries that were forced to realize on their assets under pressure of their creditors. But strange as it may seem to the outsider, the diamond trade has weathered the crisis to an extent that no other industry has been able to do and instead of growing weaker, the position of the diamond market is now growing stronger every day."

"Those who have truly investigated the situation learned there was a big factor in the diamond situation that did not occur in other industries; namely, the conservative and intelligent control of the raw material at its source, the production of the bulk of the larger stones being controlled by the DeBeers interests, and the marketing of the rough of the world almost generally controlled by the Diamond Syndicate of London, which made no attempt to force diamonds upon the cutter either by price concessions or otherwise."

"When the crisis came and had to be weathered, the drop in demand by the buying public of the world was compensated for by a drop in supply; practically by the cessation of the supply of raw material, a condition that existed in no other

1920	Jewelry	Watches	Diamonds	Total
Inventory Feb. 1..	\$59,324.86	\$50,237.42	\$418,987.90	\$528,550.18
Gross Profit for Year.....	38.6%	20.7%	66.0%	

1920	Jewelry		Watches		Diamonds	
	Purchases	Sales	Purchases	Sales	Purchases	Sales
Feb.	\$13,804.28	\$10,748.52	\$35,401.84	\$43,848.78	\$1,342.44	\$59,450.06
March	11,075.36	9,176.62	29,719.80	33,811.28	842.50	14,333.34
April	12,041.42	10,617.40	30,761.86	41,923.00	3,492.34	22,615.52
May	4,987.14	10,678.12	18,536.14	36,005.86	.....	11,405.92
June	9,473.06	4,620.48	26,637.92	27,716.34	25.70	4,850.14
July	14,143.06	11,380.62	18,200.32	28,379.66	43.34	8,600.20
Aug.	10,401.84	24,923.90	26,520.76	40,497.74	.....	15,314.74
Sept.	13,800.16	16,216.36	35,553.02	35,209.74	.....	7,255.06
Oct.	8,055.22	15,825.68	23,855.44	45,722.24	.....	15,140.04
Nov.	5,074.16	19,011.60	30,544.88	43,575.16	.....	8,407.16
Dec.	958.88	12,970.68	33,245.46	38,818.32	2,256.00	8,841.20
1921						
Jan.	1,340.76	2,732.28	12,567.72	7,806.02	None	3,013.48
Total ...	\$105,346.14	\$158,811.26	\$321,653.16	\$423,274.14	\$ 8,002.32	\$170,411.36

1920	Total		Total Beginning Inventory	Total Beginning Payables	Total Beginning Receivables
	Purchases	Sales			
Feb.	\$ 50,728.56	\$113,056.36	\$528,550.18	\$339,224.38	\$372,567.32
March	41,637.66	57,321.24	487,551.14	345,380.66	444,136.28
April	46,295.62	84,155.92	482,375.32	359,094.48	457,983.42
May	23,523.28	59,049.90	460,819.46	868,000.82	497,411.14
June	36,137.58	37,192.96	433,095.52	365,431.10	522,366.82
July	32,396.62	48,438.48	447,475.78	355,252.08	503,893.04
Aug.	36,031.60	80,736.38	434,613.84	268,268.86	425,144.08
Sept.	49,452.18	58,681.76	406,927.34	263,820.12	452,186.04
Oct.	31,910.66	76,669.78	408,068.94	271,324.82	459,580.44
Nov.	35,619.04	71,083.92	378,521.26	259,287.08	486,039.06
Dec.	36,460.34	60,630.20	355,047.06	264,072.06	521,842.26
1921					
Jan.	13,908.48	13,551.78	343,099.96	245,503.24	517,048.14
Total ...	\$435,001.62	\$761,406.76			

ard, Illinois, Elgin, and Waltham watches and carried on a general wholesale business in gold and gold-filled cases, gold and plated jewelry, chains, and rings.

industry. This has given an opportunity to have the cut goods on the world's market gradually absorbed by the moderate yet steady demand that exists even in the poorest times. As this stock has been gradually taken up by the public, the market for diamonds continues to grow stronger because there is no weakening at the source of supply.

"True, the prices in some cases have been affected by those of 'distressed' goods thrown on the market as a result of a few failures, this being apparent more particularly in the small stones which also were affected by inferior rough from the

1921	Jewelry	Watches	Diamonds	Total
Inventory Feb. 1.	\$72,467.82	\$46,198.36	\$363,268.86	\$481,935.04
Gross Profit for				
Year.....	38.0%	20.0%	Loss 9.3%*	

1921	Jewelry		Watches		Diamonds		Sales
	Purchases	Sales	Purchases	Sales	Purchases	Sales	
Feb.	\$10,620.94	\$12,371.04	\$24,450.44	\$24,365.08	.....	.....	\$ 3,051.10
March	4,602.20	8,301.06	20,048.44	20,520.62	.....	.....	4,317.16
April	5,206.42	8,926.18	16,538.58	23,034.04	.....	.....	4,041.18
May	11,616.96	9,619.96	20,187.54	15,785.84	\$ 1,115.40	.....	3,180.06
June	7,443.06	6,295.32	18,252.96	18,304.16	277.00	.....	3,298.20
July	7,109.32	10,890.26	6,802.60	16,684.40	.....	.....	8,188.36
Aug.	9,491.82	13,090.28	26,277.58	32,471.86	.....	.....	4,122.78
Sept.	6,902.06	12,780.78	28,359.86	20,667.14	.....	.....	1,104.04
Oct.	7,425.52	13,205.76	25,247.12	27,058.64	12,433.00	14,139.62	
Nov.	11,270.40	18,026.22	23,284.86	28,445.20	.....	.....	2,801.66
Dec.	5,186.36	15,302.42	22,182.44	38,657.64	.....	.....	11,426.26

1922	Jewelry	Watches	Diamonds	Total
Jan.	\$13,030.60	\$3,366.40	\$8,181.80	.....
Total ...	\$99,906.66	\$133,977.28	\$239,528.76	\$283,767.32

1922	Total Purchases	Sales	Total Beginning Inventory	Total Beginning Payables	Total Beginning Receivables
			Inventory	Payables	Receivables
Feb.	\$ 35,071.38	\$ 39,788.82	\$481,935.04	\$149,530.80	\$296,473.80
March	24,050.64	33,138.84	484,046.84	172,977.86	314,005.10
April	21,505.00	36,002.60	482,724.48	174,018.40	317,355.94
May	32,019.00	28,586.76	474,359.54	178,467.36	328,191.10
June	25,073.02	28,488.68	484,390.54	190,433.00	320,207.58
July	13,911.92	35,763.02	487,136.52	205,180.96	338,132.06
Aug.	35,769.40	50,584.02	473,471.02	162,337.40	303,883.24
Sept.	33,262.02	43,041.06	467,268.10	182,122.82	327,516.04
Oct.	45,105.64	54,044.02	467,156.56	198,981.66	345,176.00
Nov.	34,555.26	50,173.08	468,442.50	222,218.36	367,080.10
Dec.	27,368.80	65,386.32	462,050.00	234,092.66	389,112.28

1922	Jan.	20,777.12	437,302.06	196,911.60	390,417.16
Total	\$353,261.72	\$487,636.14			

*Registered in "Depreciation" on January 31, 1922—not in "Sales."

In order to aid in determining what policy his firm should follow in the future, the president of the Genesee Company had the figures on page 450 and above compiled from the firm's books.

In replying to a letter from a customer in February, 1922, re-

Congo not under the Syndicate's control. But this situation was met by a readjustment of the prices of small rough by the Syndicate which has helped to set a real market price for mèlée throughout the world. As a general proposition, however, it may be stated that the consumption of diamonds is gradually eating up the stocks on hand and the new goods that are coming and will come in the

garding the general trend of diamond prices from 1916 through 1921, the president of the Genessee Company wrote as follows:

Gentlemen:

Responding to yours of the 24th, you have asked us a question which would be worth a good deal of money to us if we could answer it down to date. From January, 1916, to the peak of war prices there was an advance of roughly 150% in price. Since the peak, diamonds have been worth what they will bring. We have had quotations on poorer grades of stones weighing $\frac{1}{2}$ carat and under amounting to between 40% and 50% of the cost of the same merchandise in February, 1920. A quotation this morning on $\frac{1}{4}$ k. sizes in top grades is \$210 per carat as against a cost to us in October, 1919, of \$265. This may or may not be indicative of the general price level, as tomorrow someone may come in who needs ready cash and duplicate the lot at \$170 per carat.

The general tendency is for a stiffening in price, however, as irregular supplies of merchandise are becoming exhausted. Eventually the price to us will return to a base set by the Syndicate at London. We are assured that, with the exception of $\frac{1}{5}$ k. and under, the next lot marketed by it will be at the price of the last lot delivered. Its vaults have been closed for upwards of two years.

Should the Genesee Company have endeavored to reduce its diamond inventory by quoting lower prices, or was it justified in holding its stock on the assumption that diamond values would be substantially unaffected by changes in the general price level?

12. COFFEYVILLE TEXTILE MACHINERY COMPANY— DERIVED DEMAND¹

Although costs had not been reduced appreciably, it was proposed in January, 1922, that the Coffeyville Textile Machinery Company should reduce its prices in order to stimulate sales.

When the depression began in the summer of 1920, the company had orders on hand for more than two years' production, but cancelations reduced the orders by about one-half. Mill

market are being sold at prices that are determined by the cost of rough from the Syndicate plus the cost of labor; and the Syndicate (with the exception of the rough for very small stones) has continued to follow its established policy of maintaining prices.

"Therefore we see in the diamond trade a stability of value that exists in few if any other industries, most of which have had to readjust their prices as a result of the lower cost of the new raw material. Instead of looking forward to a gradual decrease to pre-war levels in the price of his merchandise, the seller of diamonds almost alone can look forward to a strengthening of his market as the

¹Copeland, p. 701.

companies which had buildings partially or wholly completed proceeded with the installation of machinery in order to minimize the loss on their investment. When these orders were completed and installed, the Coffeyville Textile Machinery Company found that because of the general depression in the textile industry practically no demand existed for machinery, except for repair jobs and occasional small lots. The high cost of building and equipping new mills prevented expansion of the industry. Mills previously constructed had been written down in some instances to \$10 per spindle, whereas a mill constructed at current prices would have cost \$50 to \$70 per spindle.¹

days go on and at least a maintenance of present prices, if not an increase of the same in the near future.

"Owing to the great value of his diamond lines, the jeweler in some cases found this stock a handicap and hard load to carry when the public ceased purchasing; but he should be thankful that in this he was not in the position of merchants in other lines whose stock on hand often suffered a tremendous, if not a total loss. But the jeweler who is in a financial position to carry his stock of diamonds, need take no such loss, as with the increasing demand which is now developing he can eventually liquidate it not only without loss but at a profit."

The estimated cost per spindle of a four-story spinning mill and a one-story weave shed with basement and saw-tooth roof for producing print cloths was as follows:

1910.....	\$28.28	1917.....	\$37.63
1911.....	27.67	1918.....	45.29
1912.....	27.75	1919.....	55.48
1913.....	27.53	1920.....	73.05
1914.....	26.23	1921.....	60.36
1915.....	27.28	1922.....	53.82
1916.....	30.27		

Estimated cost, as of January 1, 1911, and January 1, 1922, of erecting and equipping complete a spinning mill of 50,000 spindles making No. 16 carded yarns for hosiery trade, finished on cones and skeins.

	1911	1922
Mill buildings (including warehouse).....	\$ 252,800	\$ 498,000
Fire protection	15,400	30,700
Lighting	8,400	15,800
Heating and humidifying.....	17,600	29,000
Shafting	7,100	9,000
Motors and power wiring.....	56,000	88,800
Belting	8,800	15,000
Supplies and miscellaneous equipment.....	40,100	80,000
Power plant complete.....	198,300	315,000
Textile machinery and erection.....	496,400	1,069,200
Freights	15,800	19,400
Engineering and contingencies.....	111,800	217,000
Total	\$1,228,500	\$2,386,900

Above buildings of slow-burning construction, three stories for spinning, one story for picking, and four stories for storehouse for a six months' supply.

Sprinkler and hydrants for fire protection, electric lights, steam coils for heating, individual heads for humidifiers.

Power houses with steam turbines.

(Footnote continued on page 454)

The prices of the Coffeyville Textile Machinery Company for typical machines were approximately as follows:

Date (January 1)	Finisher Picker	Card	Comber	Drawing Frame per Delivery	Roving Frame per Delivery	Spinning Frame per Spindle	Plain Loom
1910	\$ 750	\$ 600	\$1,250	\$ 60	\$ 6.50	\$2.60	\$ 83.00
1911	700	550	1,250	60	5.60	2.50	83.00
1912	750	600	1,250	55	5.75	2.50	83.00
1913	700	550	1,200	55	5.50	2.50	83.00
1914	675	500	1,150	55	5.00	2.00	83.00
1915	700	525	1,300	60	5.50	2.20	83.00
1916	750	650	1,300	60	6.75	2.65	85.00
1917	1,000	850	1,400	75	8.50	3.90	101.00
1918	1,280	975	1,800	90	10.00	4.50	152.00
1919	1,600	1,200	2,000	115	13.00	5.50	184.50
1920	1,760	1,325	2,400	125	14.50	6.00	213.50
1921	1,920	1,600	2,500	160	18.00	7.00	213.50
1922	1,600	1,325	2,250	125	14.50	6.00	147.00

Although the prices of raw materials had fallen by January, 1922, the cost of manufacturing textile machinery per unit had shown little decline from the peak. Prices of machines had been reduced to a cost basis. Even though an increase in orders would have permitted wider distribution of overhead, it was doubtful

(Footnote continued from page 453.)

Drives were individual motors on pickers, two and four frame for roving and spinning, and group drive for balance of machinery.

Estimated cost as of January 1, 1911, and January 1, 1922, of erecting and equipping a weaving shed containing 1,280 automatic looms to weave print cloths 38½ inches wide, 5.35 yard, 64 x 60 threads per inch and of carded No. 28.5 warp and No. 39 filling:

Weave Shed	1911	1922
Manufacturing buildings, including plumbing....	\$180,500	\$ 360,900
Fire protection, including tank, hose houses, hydrants and sprinklers.....	10,400	19,300
Lighting, including transformers and wiring	4,100	7,800
Heating and humidifying.....	18,500	30,700
Shafting	11,400	14,500
Motors and power wiring.....	16,700	25,400
Belting	5,600	9,900
Supplies	5,000	10,000
Power plant complete.....	110,000	168,700
Textile machinery	243,700	416,900
Freight	5,000	9,700
Engineering, contingencies	61,100	116,000
Total.....	\$672,000	\$1,189,800

Buildings of slow-burning construction. Shed one story with basement and saw-tooth roof. Sprinkler and hydrants for fire protection, electric lights, steam

whether any practicable reduction in prices below cost would increase sales.

The company had a large plant and employed skilled workmen. Its products were manufactured to order; because of the uncertainty of specifications on future orders, it was not practical to manufacture large numbers of machines for stock.

13. CROCKER & LANG VENEER COMPANY—JOINT COST¹

The Crocker & Lang Veneer Company in 1922 wished to increase its sales of veneer. Since only about 30% of the material in the logs purchased was satisfactory for veneer,² the remainder was made into lumber. Up to that time three-fourths of the cost of the logs had been charged to veneer and one-fourth to the lumber by-product. Under this method of allocating cost a good profit was made on the manufacture of veneer and a small profit on the manufacture of lumber. It was proposed, however, that the firm should change its method of charging raw material to its products in order that the cost of manufactured veneer could be reduced and a consequent cut in price made. No definite figures were available to show the probable effects of such a procedure on gross sales and net profit.

About 50% of the material used by the veneer plant was coils for heating, individual heads for humidity. Power house with steam turbine. Group drive with shafting in basement.

Figured that yarns would be received on beams and cones or tubes.

Goods woven on automatic looms.

Same equipment figured for both 1911 and 1922, but with prices changed according to years.

Year Book of the National Association of Cotton Manufacturers with Cotton Manufacturers' Manual—1922, pp. 195, 196, 198.

¹Copeland, p. 683.

²Veneer is a term applied to thin leaves or layers of wood. Generally veneer is made of valuable wood and is laid over a core of inferior wood. Ply wood also is made of layers of veneer in which the grains run in different directions so that it is impossible to split it; in this way strong, light pieces are built up. Veneer is cut, either with thin saws or with knives, from logs which have been steamed for several hours in order to soften them.

The company saws each log into as large a quantity of veneer as possible. The veneer from each log is kept together throughout the processes of drying, flattening, and shipping. The salesmen go out with samples from each log which are selected so as to give the best idea of the color and figure. As all veneer from one log will react similarly to the same kind of varnish and polishing and will have the same figure, the users of high-grade veneers always desire to obtain the product from one log for use in one room or in one piece of furniture. It is sold by surface area; the prices are set according to the species and quality of log from which the veneer is obtained and according to the beauty of the figure.

yellow birch and hard maple logs from Vermont. Although logs suitable for lumber could be obtained by sawmills for \$15 to \$20 per thousand feet, the cost of logs suitable for veneer was about \$50 per thousand feet.¹ Men were sent out from the Crocker & Lang Veneer Company's factory in Boston to travel through the high-grade maple and birch sections of western Vermont in order to pick out logs either in the woods or at the mills which were judged to be suitable for veneer. Similar methods were employed in selecting walnut and yellow poplar logs. The cost of mahogany and foreign woods, obtained through brokers in London who were acquainted with the needs of veneer plants, occasionally exceeded \$200 per thousand feet.

One rate of cost distribution which had been considered was to charge two-thirds of the raw material price to the veneer and one-third to the lumber. It had been estimated that thereby a slight loss would be taken on the lumber, but that it then would be possible to reduce the price on veneer low enough to undersell competitors and increase sales substantially.

It also had been suggested that the raw material be charged to both the veneer and the lumber at its actual cost. In that case lumber would bear 70% of the raw material cost and veneer the remaining 30%. This method would have resulted in a large increase in the profit on veneer and a heavy loss on lumber.

Another plan which was discussed was to allocate the cost of the raw material to the product according to the amount for which the product was sold; thus if logs costing \$60 were manufactured into veneer that sold for \$150 and lumber that sold for \$30, the raw material cost of the veneer would be figured at \$50 and the lumber at \$10.

14. THE KINGSTON COMPANY—PRORATING COSTS²

The Kingston Company, which sold washed sand and gravel for building purposes, obtained the greater part of its raw material from land banks.³ As an adequate supply of material of the quality that it desired was difficult to obtain within easy

¹These were current prices in October, 1922.

²See "A Problem of Joint Cost," by W. M. Cole, *Harvard Business Review*, vol. 1, p. 428.

³Land banks were situated inland. They were usually small. The raw material, which was dug up with steam shovels, was screened where it was produced.

trucking distance of the city, the company in 1922 had purchased an extensive water bank,¹ which was situated in the harbor. It was surrounded on three sides by water and the washed sand and gravel was loaded directly from a dredge into scows and towed to the company's wharf and storeyard which were located in a city five miles away.

Prior to the purchase of the property, a survey of it had been undertaken to determine the amount of raw material available. Studies of elevations and contours were made and borings were taken to find out the average depth of the material. From this assay, it was estimated that the raw material cost from 2 to 3 cents a ton in the ground. An hydraulic dredge of the elevator type was purchased by the company. The machine was mounted on a flat boat and could be towed from place to place. It was designed for digging, screening and washing sand and gravel. The excavating apparatus consisted of an endless chain bucket elevator, which delivered the material into a hopper with removable iron grating from which it passed into a revolving screen. The material was screened and washed by copious streams of water supplied by "high duty" centrifugal pumps. The sand then was discharged into a scow on one side of the boat, the gravel into a scow on the other side, and the large boulders were discharged at the stern. Each scow held approximately 700 tons.

Four or five months after dredging operations were commenced, it was proposed that production and material costs be prorated between the sand and the gravel. A distribution of costs had not been undertaken before because of the difficulty of determining the actual costs for each product. Conditions in the land banks varied so widely that a separate proration would have been necessary for every property owned by the company. The expenses involved in separate prorations made them prohibitive. The selling prices of both sand and gravel had been dictated largely by conditions of competition and the company had been interested in its gross profit rather than in its profit on sand or on gravel.

About 40% of the raw material was sand and 60% gravel. It cost 20 cents per ton of finished product to operate the dredge. Eight hundred to twelve hundred tons were produced each day.

¹Water banks were either islands or peninsulas. Dredging machinery mounted on a scow that could be towed from place to place was used in working these banks

Eleven men were employed, seven of whom performed specified pieces of labor. The men lived on the boat and their meals were furnished by the company.

The next cost was for the upkeep and the towing of the scows. The scows, part of which had been purchased in 1922, were owned by the company. They depreciated rapidly and frequent repairs were necessary. While the cost varied somewhat according to whether it was a single or double tow, it was estimated that 25 cents per ton approximated the towing and maintenance charges. The unloading of the scows at the storage yard cost 5 cents per ton.

The storage capacity of the yard, which was $1\frac{1}{2}$ acres in extent, was from 18,000 to 20,000 tons. All sales were made on a delivery basis. The company operated 22 trucks, which hauled the sand and gravel from the yard to the job. The cost of operating these trucks had never been distributed accurately. The company did some contract work and the trucks often were utilized for carrying building materials other than sand or gravel.

In September, 1923, the selling price of sand was \$1.75 and of gravel, \$1.40, delivered within a five-mile radius of the yard. This was approximately the ratio which ordinarily existed between the selling prices of the two products.

One of the executives proposed that in the future all costs incident to the digging, screening, towing, and handling be prorated 40% to sand and 60% to gravel. It was objected that this was obviously unfair because, when the scows once were loaded, it cost practically the same amount to handle a ton of gravel as to handle a ton of sand.

Another suggestion was that costs be prorated on a 40%-60% basis up to the time the finished products reached the storage yard and that from then on charges be apportioned directly to each material.

Still another suggestion was that costs be distributed in proportion to the value of each product produced and not on a quantity basis. Advocates of this plan maintained that since the selling prices of sand and gravel—which were determined largely by competitive conditions—were fairly stable, this offered a fairer means of prorating expenses.

Which basis, if any, should be adopted for prorating the production costs of sand and gravel?

B. CUSTOMER RELATIONS AND THE BUSINESS CYCLE

15. CLARION PHONOGRAPH COMPANY—ADOPTION OF SALES QUOTA
TO FILL DISTRIBUTERS' ORDERS

The output of the Clarion Phonograph Company was sold through 21 wholesale distributors who were given exclusive territory privileges. Each territory included a population of at least 3,000,000. The distributors sold only Clarion phonographs. In the spring of 1923, the company considered the adoption of a sales quota plan designed to coordinate factory production with distributors' orders.

The company's sales were subject to a marked seasonal variation. The peak ordinarily occurred in the months from October to January. There followed a sharp reduction in April and a low volume during the summer months. Phonographs were manufactured in 11 models which were sold at retail prices ranging from \$50 to \$250, and in supplementary de luxe models priced at from \$300 to \$3,000. Sales for 1923 were estimated at \$4,000,000.

Since phonographs were a luxury article, the demand for them was particularly sensitive to changes in prosperity. The style factor, furthermore, was an important consideration, because the type of cabinet in demand was influenced by the prevailing mode in home furnishings. In 1922, 60% of the cabinets were finished in red mahogany, but in the first half of 1923, 70% were finished in brown.

A close relationship existed between the company and the wholesale distributors upon whom it depended to secure distribution among retailers. Distributors were selected only after careful consideration of their financial responsibility and merchandising ability. Phonographs were delivered to them in car-load lots; terms of payment were 15 days after date of invoice with a 2% cash discount. The wholesalers' functions were as follows: to develop their territories by selling to the maximum number of retailers and by inducing the latter to increase sales efforts for the disposal of Clarion phonographs; to receive and pay for phonographs manufactured during the summer months, in order to allow production in the dull season in preparation for fall demand; and to keep a complete stock which was at all times adequate to supply retailers.

In the fall of 1920, the demand for phonographs declined, and cancelations of unfilled orders were received by the Clarion Phonograph Company. It was deemed inadvisable to enforce acceptance of these orders, because the distributorers could not sell phonographs to retailers, and therefore, could not make payments on deliveries. As a result, the company wrote off a serious inventory loss and gradually disposed of the machines at reduced prices.

In 1921, buying was curtailed, and after retailers disposed of surplus stocks, they placed orders only for immediate requirements. In 1922, in view of the experience of 1920, wholesale distributorers waited until fall before placing their orders despite a partial revival of demand. The company was forced to manufacture for stock and finance the inventory of finished product during the summer. Fall orders, however, exhausted stocks, and it became evident that the demand was in excess of plant capacity.

In April, 1923, the company decided to adopt a plan of sales quotas for distributorers in order to secure early orders, to receive payment for phonographs manufactured during the summer, and to prevent shortages in the autumn. A quota for each distributor for the second half of that year was computed on the basis of monthly sales records for previous years. The quotas were adjusted according to the company's estimate of business activity in the fall and the relative prosperity of the various sections of the country in which distributorers were located. The element of growth of the business also was taken into consideration. Division of the total of each quota into the various models was based on records of distributorers' previous sales and on the forecast of style tendencies. The total number of phonographs of the combined quotas was compared with plant capacity, and sales planned were adjusted so as not to exceed a practicable plant production.

The quotas thus calculated were submitted to distributorers for acceptance. An explanation of the plan was included with the announcement that orders were to be taken on the basis of quotas at the annual convention of distributorers in May. Orders placed at that time were to be given preference in delivery to those placed at any subsequent time during the year. Delivery of orders made under this scheme was specified as 10% in each of the months of June, July, and August, and the remaining 70%

in the fall. After confirmation had been sent by the Clarion Phonograph Company, these orders were not subject to cancellation.

One advantage to be gained by the adoption of the plan was immediate receipt of payment for phonographs manufactured during the summer, because invoices regularly were paid within 15 days from their date in order to secure the 2% cash discounts. The company was assured, moreover, that wholesalers carried stocks adequate for the requirements of retailers. Accurate planning of production for six months in advance, which was made possible, allowed economies in purchase of raw materials and in plant operation. A shortage could occur only if demand in the fall exceeded accumulated stocks and factory capacity, and a serious scarcity in any one locality was not expected, because all distributors were supplied with their quotas. Adjustment of quotas to conform to an estimate of business activity reduced the hazard of overstocking wholesalers and thus diminished the possibility of attempted cancellations. Sales were stimulated because distributors were influenced to contract for quotas which included an allowance for growth, and because they were obliged to secure orders from retailers equal to the quantity of their own quotas.

It was not certain that wholesalers were willing to accept quotas set by the company and to contract for six months' supply in advance. The company undertook the responsibility of careful planning of sales for each distributor. An erroneous estimate by the company, which resulted in overstocking or undersupplying a distributor, might arouse antagonism when close cooperation was of the highest importance. Relief from cancellations or shortages depended on the accuracy of estimates. Changes made in quotas by distributors could not be accepted if orders exceeded production capacity, or if the quantity specified was deemed insufficient for expected requirements. Alterations made by the company in orders which were not in agreement with quotas, were likely to cause resentment among the wholesalers.

The company's selling problem was not solved fully by disposal of its product to wholesalers. Retailers were unable to buy distributors' stocks unless they could be assured of a demand from consumers. It was necessary for the company, therefore, to assist in the stimulation of retailers' sales.

At the distributor's convention in May, the plan was accepted by the wholesalers. The possibility of a shortage of phonographs in the fall was explained. Wholesalers placed orders which at least equaled the quantities specified in their quotas and in many cases exceeded them. When all orders were received by the company, the total quantity was scaled down so as to conform to the maximum production schedule. In many orders the number of phonographs of various models was changed in order to include a larger proportion of models which were more profitable for both the distributor and manufacturer. After these alterations were made, each order was returned to the wholesaler for final confirmation.

An extensive advertising campaign in both newspapers and national magazines was planned for the fall of 1923 to stimulate consumer demand. In order to enlist the support of retailers, the company advised them by mail of the publicity plans and of the advertisements that were to appear. In addition, six men trained in distribution methods were sent out to aid wholesale distributors in securing new customers and to assist retailers in selling.

16. DEARBORN STOVE COMPANY—PREVENTING OVERBUYING WHEN CONDITIONS INDICATED A DECLINE IN DEMAND

The management of the Dearborn Stove Company in the spring of 1923 discussed the desirability of advising the retailers in respect to the size of their orders to prevent their overbuying. The company, which manufactured coal and gas household ranges, sold directly to retailers. The product was marketed through exclusive agents in the small towns, although in a few large cities sales were made to several retailers. The company had been established for 40 years and it had the good-will of the retail distributor. Because of the bulk and weight of the product and the consequent high transportation charges the sales of the company were limited to four states. Thus it was possible for the Dearborn Stove Company to maintain close contact with its distributor.

It had been the policy of the company to sell to the retailer solely according to the latter's estimates of the probable quantity of sales. Consequently, when the depression of 1920 came,

many retailers were overstocked with high-priced merchandise and had placed orders for stoves which they could not sell. The result was that many of the retailers canceled their orders. The Dearborn Stove Company did not bring suit to enforce the contracts because it did not wish to lose the good-will of its customers, and furthermore such suits often precipitated the retailers into bankruptcy and the manufacturer realized little, if any, financial gain from the suit. The retailers, with few exceptions, were in fact unable to pay. This situation, which was a result of the depression, occasioned a substantial financial loss to the manufacturer and brought out the necessity for the adoption of a different form of sales strategy thereafter. The Dearborn Stove Company had contracted for iron to fill the orders for stoves. To maintain its excellent record the company had to accept every ton of iron for which it had contracted.

It was apparent that since the interests of the manufacturer and the retailer were identical, a greater degree of cooperation was necessary. Because the Dearborn Stove Company had shared the optimism of the retailers in 1920, it was responsible jointly with the retailers for the overstocks. By an unintelligent and overaggressive sales policy, without due regard to approaching conditions, the company had encouraged the retailers in following a poor policy.

The policy of advising the retailers not to overpurchase was likely to result in the immediate loss of sales if the retailer followed the manufacturer's advice. There was also the possibility that competitors might sell to retailers whom the company had advised to reduce their orders. This objection, however, was minimized because of the cooperation that the company had established with its retail distributors. In most instances, its retailers were exclusive agents and did not carry directly competing products. It was also conceivable that the company might give the wrong advice and lose profit both for itself and for the retailer, but because of the broader knowledge of the manufacturer obtained through its relations with many retailers, it appeared that the company's advice was more likely to be correct than the judgment of the average individual retailer. It was expected that a few distributors would be indifferent to the proposed policy and prefer to rely on their own judgment. There also was the objection that a negative effect was likely to be

produced on the sales force of the company through the adoption of the proposed merchandising plan. There might be difficulty in establishing cooperation between salesmen and retailers.

In the practice of not overselling when prices were high or conditions unfavorable, the company strengthened its credit risk by safeguarding the sound position of the retailer. The friction that developed when the retailer was forced to cancel was eliminated. It was the experience of the company that the distributors were likely to become antagonistic when overstocked. The failure to make sales was often attributed to the characteristics of the product rather than to an ill-advised purchasing policy and adverse business conditions. After the adoption of the proposed policy the retailers no longer could say that the manufacturer had forced them to buy. The manufacturer need not purchase iron at high prices for the orders which the retailer might cancel.

The management of the Dearborn Stove Company decided that it should endeavor to judge conditions and advise the retailers with respect to their purchases and commitments accordingly. The policy was to be one of friendly cooperation, however, and it was not intended to convey the impression that the retailer was being told how to conduct his affairs.

In 1923, about eight of the retailers to whom the company sold were located in towns where the purchasing power of the consumer was dependent upon the prosperity of the cotton manufacturing industry. Because of wage disagreements, many of the workers had been idle frequently and had earned comparatively little during the year. It appeared to the manufacturer that sales to the factory workers were to be low. In one town, the retailer normally had purchased about \$15,000 worth of stoves annually. Because of the existing local conditions, the retailer was advised by the Dearborn Stove Company to reduce his purchases by about 25% in 1923. Similar suggestions were offered to the retailers in the seven or eight other towns and their cooperation was secured. While this particular example was illustrative only of local conditions, it was decided that the same merchandising plan should be followed with all retailers when business conditions indicated a general future decline in prices and in the purchasing power of the consumer. Up to August, 1923, it had not been necessary to warn retailers against a pre-

cipitate fall in prices. In August, 1923, it was not apparent to the management of the Dearborn Stove Company that prices were likely to move downward to any appreciable extent during the remainder of the year.

17. THOMPSON REFINERIES, INCORPORATED—ENFORCEMENT OF CUSTOMERS' CONTRACTS

Thompson Refineries, Incorporated, refined about one-quarter of the sugar used in the United States. In May, 1920, contracts were made with its customers on a basis of 22½ cents per pound for granulated sugar to be delivered between August and the end of the year. After the sudden decline in prices, during the summer of 1920, attempts were made by customers to cancel or repudiate their May contracts. Thompson Refineries, Incorporated, had purchased a supply of raw sugar in order to fulfil its contracts. Confronted with a large inventory loss that might prove disastrous if customers did not meet their obligations, the management considered the adoption of a policy of strict enforcement of all contracts by recourse to the courts when necessary.

It was not the usual policy to sell for more than 30 days' deferred delivery. The primary reason for departure from this policy in May was the insistent demand from the trade for definite assurance of a supply of sugar for the remainder of the year. An abnormal demand was stimulated by the shortages of the previous three years, uncertainty of the continuance of governmental control of the industry, export requirements, a flood of statistical reports, legislation, prophecies, and strikes. The public demanded sugar in any form, at any price, in any quantity, and for any delivery. Householders, retail and wholesale merchants, manufacturers, and speculators joined in an attempt to secure sugar. The news of a partial crop failure in Cuba intensified the buying. Crop estimates were reduced repeatedly, and in May the difference between the highest original estimate and the lowest revised estimate represented a loss of about 1,000,000 tons. With a world shortage and large sales to Europe from Cuba, the partial crop failure in Cuba created an unfavorable outlook for the sugar supply in the United States. In April the demand, regardless of price, was beyond any apparent possibility of supply from the usual refining sources.

As one of the largest merchandising units in the refining industry, Thompson Refineries, Incorporated, had recognized its obligation to furnish its customers with a supply of raw sugar adequate for their needs, as determined by former purchases. Accordingly, it had bought raw sugar from additional sources, principally from Java. The prices, which averaged approximately 19 cents per pound, were substantially lower than prevailing Cuban prices, and from 5 to 10 cents below the subsequent asking price of the Cuban planters' pool. On May 24, 1920, these purchases were offered to customers at a uniform price of 22½ cents per pound, less 2% cash discount, for delivery in the month in which the sugar arrived. This price was from 1½ cents to 3½ cents per pound lower than the competitive prices of refined sugar for similar deliveries which prevailed at that time. The public and manufacturers, thus, were assured of a supply at prices below the prevailing market for prompt deliveries. Customers quickly took the tenders of sugar, and in most instances it was necessary to accept orders for less sugar than the quantity asked.

Ordinarily purchases were made only from the refiners. That year, under the stimulus of unprecedented demand and probable shortage, this policy was abandoned by the manufacturers and grocers; purchases in excess of the needs of the country were made directly from foreign producers in South America, Europe, the West Indies, and the Far East to arrive during the last six months of the year. Sugar which had not been included in the statistics of the world's supply and supposedly had been consumed was to be found in the warehouses of manufacturers and wholesale grocers. It had been secured from points as remote as the interior of China.

Much of this sugar from abroad was unfit for household or canning use. Part of it was dark, and required additional refin-

¹Sugar came to the United States from nearly 50 countries. In the single month of July, 587,000 tons of sugar reached domestic ports. When the figures for imports of both raw and refined sugar for 1920 were available, it showed the unprecedented total of 4,460,166 tons, as compared with 3,976,331 tons in 1919, and 3,115,143 tons in 1918. In 1920, 14.24% of the sugar consumed in the United States was secured from sources not included in figures of imports from countries which regularly furnished the supply of raw sugar, as compared with .83% in 1921, and .87% in 1922. The vast and numerous commitments by the trade, aside from the commitments placed with the refiners, could not have been foreseen. No statistical means for recording them were available. In many instances they were concealed.

ing. Most of the purchases were under confirmed letters of credit. Payment became difficult, and the resales which were attempted hastened the collapse of prices. Under the pressure of these sales, the market weakened and broke in August; the most violent price decline ever recorded in sugar followed. Customers were as anxious to cancel or repudiate contracts as they had been to secure them. On August 24, Thompson Refineries, Incorporated, withdrew from the market and employed its facilities in the completion of the contracts already made.

The company honored all its contracts for the purchase of raw sugar in order to permit the fulfilment of its obligations to customers, and therefore was justified, the management believed, in requiring its customers to fulfil their contracts. Both parties to the contracts had acted in good faith when orders were placed. The company possessed an order blank for each sale, signed by the buyer or his agent, which specified the quantity and the price. In each case confirmation of the order had been sent. Hence an adequate legal basis existed from which favorable judgment could be expected, if it was advisable to sue for damages when contracts were broken. To allow cancellations was an injustice to other customers who completed their contracts in spite of heavy losses. Collection of damages reduced the company's loss from the decreased value of inventory. Because of the prevalence of cancellations in the fall of 1920, a policy of strict enforcement adopted by one of the leading companies in the sugar industry emphasized the inviolability of contracts and aided in the stabilization of conditions in other industries.

Although further business relations with a few of the customers who attempted to repudiate contracts were not desired, the most serious objection to the enforcement of contracts was the loss of good-will. Another obstacle to enforcement of contracts was the weakened financial condition of many customers, who were unable to pay for deliveries under contracts. A suit might force a portion of these into bankruptcy. This difficulty could be obviated by extension of time of payment. The management decided, accordingly, to enforce all contracts and to resort to suits at law for damages in instances where delivery of sugar was refused.

The following letters were sent to the company's 25,000 customers.

October 13, 1920

To Our Customers:

In view of the recent very serious decline in sugar prices, we recognize the difficulty of the situation now confronting many of you who have unfilled contracts for refined sugar purchased from us at 22½ cents per pound. We, however, are in the same situation, for we have purchased raw sugars at correspondingly high prices to fill your contracts. In addition, we have to face large losses on our own unsold inventory, also purchased at high prices. We are obliged, therefore, to ask you to carry out your contracts with us promptly.

We desire, however, to be of as much service to you as possible in this crisis, and accordingly we are offering the following plan which we believe will be helpful to the trade and will meet with its approval. To those of you who have not been in a position to withdraw all sugars upon your outstanding contracts, we offer, in the manner herein stated, delayed shipment and terms of payment for such sugars as are not yet withdrawn, in lieu of the present contract terms.

We make this offer to you so that as you require sugars for your needs you may send your specifications upon contracts which you now have with us, and may make settlement for the same upon the following terms of payment and of shipment:

You may settle for each invoice—after deducting the usual cash discount at 2%—on part cash and part trade acceptance basis; the cash payment is to be equal to our f.o.b. refinery price in force at the opening on the day of shipment; in the event that we are withdrawn from the market, the cash payment is to be equal to the "market quotation net cash duty paid" for granulated sugar as given by Willett & Gray in their daily *Sugar Trade Journal* issued on date of shipment. Such cash payment is to be remitted for within seven days after the arrival of the sugar, except that in the case of customers to whom we ordinarily make delivery on a cash basis, then the part cash payment is to be made as usual upon delivery of the sugar. For the balance of the invoice you may give us your trade acceptances, bearing interest at the rate of 6% per annum, payable as follows:

25% in three months
25% in six months
25% in nine months
25% in twelve months

If you desire to avail yourself of this offer you will be expected to furnish your specifications and complete one-half of your withdrawals upon your present outstanding contracts by January 1, 1921, and the balance prior to April 1, 1921.

These terms will not apply to any new sales of refined sugar, nor to invoices bearing date prior to October 14, 1920.

Unless this offer is accepted, all of the terms of your contracts as

entered into will remain in full force and effect. You will appreciate that this offer cannot remain open indefinitely and, accordingly, we would request that you notify us, at your earliest convenience, if you desire to avail yourself of the terms of this offer. In the meantime the offer is made subject to withdrawal as to any customer without further notice.

THOMPSON REFINERIES, INC.
General Sales Manager

December 24, 1920

On October 13, 1920, we sent to you a letter, copy of which is enclosed, offering a plan permitting of delayed shipment and deferred terms of payment in lieu of your contract terms previously entered into for the purchase by you of certain quantities of refined sugar as therein stated. The making of this offer required us to finance your withdrawals upon your present outstanding contracts for a period of one year. Similar offers have been accepted by a great many of our customers.

We then advised you that this offer could not remain open indefinitely, but requested you to notify us at your earliest convenience if you desired to avail yourself of the terms or your contracts as previously entered into would remain in full force and effect.

Accordingly, it will be necessary for you to notify us on or before January 1, 1921, whether or not you wish to take advantage of the terms of this offer.

Yours very truly,
THOMPSON REFINERIES, INC.
General Sales Manager

February 4, 1921

Dear Sirs:

During the past four months, unwarranted statements have been made relative to our original motives, our subsequent action, and our present position in connection with the 22½-cent sugar contracts entered into by us with our customers during May, June, and July, 1920.

We wish, therefore, to make a clear statement to you and to our other customers with whom we have had such cordial and satisfactory relations in the past.

During the spring of 1920, there was a severe sugar shortage, the effect of which was augmented by continual predictions of a greater shortage to come. An unprecedented volume of exports and of "toll" business was offered this company, sufficient to take up a large part of its annual capacity. In view of the fact that the shelves of the country were bare, this company did not accept export business, either direct or on "toll" contracts with the producers, holding its entire capacity for domestic customers.

This company, as a matter of principle, does not sell sugar short and

did not sell short during this period. We had purchased and had to arrive at all times more raw sugar than we had sold in the form of refined. In fact, after all the 22½-cent contracts had been made, we had left many thousands of tons of high-priced raws, on which our loss has been large.

While, heretofore, it has not been our policy to sell for long time delivery, our primary reason for departure from this policy in May, 1920, was the insistent demand of the trade for a definite assurance of a supply of sugar during the next six months.

Our customers eagerly took all the sugar which we offered and clamored for more. Whatever some of them may now seemingly persuade themselves, under the stimulus of financial necessity, they know at heart that they regarded these sugars as their property, which we had sold to them and for which they had agreed to pay.

Had the market gone the other way, our customers would have properly insisted on our performance of our obligation, and we would have fulfilled that obligation.

We are glad to say that the greater part of our customers have stood by their contracts and have taken, or are taking, the sugar as agreed.

Some, however, have repudiated their contracts.

Our customers who have fulfilled their contracts have repeatedly urged that it would be manifestly unfair to them for us to compromise with their competitors.

The commercial world stands unalterably for the inviolability of contracts. We have taken and paid for our raw sugar and we expect our customers with whom we have contracts to take the refined sugar and to pay for it.

Where a buyer recognizes his obligations but is not financially in position to take the loss incident to its completion and can satisfy us by a complete disclosure of his affairs that such is the case, we will endeavor to effect an arrangement with him which will enable him to take the sugar and to spread the payments over an extended period.

In cases, however, where we are convinced that the attitude of the buyer is prompted by a desire to escape his obligation by taking advantage of technicalities, alleged promises or representations of our officers, or similar excuses, in such cases, both for our own protection and for the protection of our customers who have fulfilled their contracts, we expect to exhaust all remedies which the law affords to enforce the contracts.

To this end we have already begun suits. A number of others are in the hands of our attorneys in course of preparation.

This letter goes to all our customers. If you are one of those who so far have not recognized their obligation under these contracts, we trust that this letter will present the matter to you in a new light.

If, on the other hand, you are one of those who have fulfilled their contracts, we hope we may enlist your support in our effort to preserve

the sanctity of contracts, without which the business of the country cannot be conducted.

Very truly yours,
THOMPSON REFINERIES, INC.
Vice-President

Of the total amount of contract sales, 15% was repudiated, involving \$20,000,000. In order to enforce all disputed contracts, 1,000 suits were instituted. A few cases were settled out of court, after suit was brought. Contracts with the larger customers were prosecuted first, in order to set an example for smaller contracts. Damages in one case were \$300,000. The management extended every aid to customers who recognized their obligations, but allowed no exceptions and brought suit against all who repudiated contracts.

In May, 1923, the president summarized the company's position as follows:

1. The contracts in question were made in good faith, and will be enforced in justice to our stockholders and in justice to the great body of our customers who met their engagements to this company in equal good faith.
2. In our letters to the trade of October 13, 1920, and February 4, 1921, we proposed various plans of deferred deliveries and deferred payments, and thus undertook to finance our customers for considerable periods in order to assist them in accepting and paying for their contract sugars. Arrangements effected under these plans are still being carried out in a large number of cases by customers who recognized the binding character of their contracts for the purchase of sugar.
3. Where a customer recognizes his obligation, but is not financially able to assume the loss incident to accepting and paying for all of the sugar at once, and can satisfy us by a complete disclosure of his affairs that such is the case, we still will endeavor to effect an arrangement with him which will enable him to meet the obligation over an extended period. It is our hope that all customers still obligated under these 1920 contracts may yet be induced to satisfy their obligations to us without the necessity of protracted litigation.
4. In every case, however, where we are convinced that the attitude of the customer is prompted by a desire to escape his obligations, we expect to exhaust all remedies which the law affords to enforce the contract.
5. We ask the support of all of our customers in our effort to uphold the sanctity of contracts, on which the stability of business must continue to depend.

**18. RANDOLPH SHOE AND LEATHER COMPANY—SUIT AGAINST
CUSTOMERS WHO CANCELED ORDERS IN 1920**

The Randolph Shoe and Leather Company manufactured medium-priced men's shoes which it distributed under its own brand to retail shoe stores throughout the United States. Early in 1920 its salesmen took orders from customers for quantities of shoes exceeding in value and in size the orders for any preceding season. For about a year prior to May, 1920, shoe factories in all sections of the country had been operating at high production levels and there had been a consequent accumulation of stock on the shelves of retail stores. Shoe retailers had experienced several profitable seasons and had been unwilling to prevent the slow accumulation of stocks, for there was a pronounced tendency on the part of retailers to assume that the larger their stock the greater the profits they were able to make.

Immediately prior to May, 1920, prices were the highest ever known, both for raw materials and for finished shoes. The Randolph Shoe and Leather Company had foreseen for several months that a drastic decline in retail and wholesale prices was probable. The salesmen of the company were instructed to take orders only for immediate requirements and not to accept orders for future delivery. Customers were advised by the company to cut down their orders and also their stocks of shoes. The salesmen discovered, however, that retailers were confident of a continuation of prosperity and purchased in as large quantities as their credit standing would permit. The salesmen were influenced by the prevailing optimism among retailers, and did not follow the instruction of the executives. Retailers were so shortsighted that they purchased in excessive quantities, even after the first signs of the approaching deflation appeared, and refused to be guided by the advice of the company.

In May, 1920, shoe retailers were discovering that consumers were unwilling to purchase shoes at the prevailing high prices. Shoe retailers were forced to follow every available expedient, in order to secure enough cash to pay their maturing bills. Regular models were offered at reduced prices, and old styles and odd lots were put on special sale at prices far below their original cost. On account of the "buyers' strike" which continued, however, it proved to be difficult to sell shoes at the reduced prices.

Under these conditions the retailers sent in cancelations of orders at a rate which indicated that fully 90% of the company's total sales for the season were certain to be affected. In numerous instances, when retailers had large stocks of shoes which they were unable to sell, instead of paying for these stocks, they met the maturing obligations by returning the shoes themselves. The reasons usually given were that the shoes arrived too late or did not fulfil the specifications in respect to color, style, and quality. If the company questioned the validity of these reasons, the retailers stated that they no longer wanted the shoes. Since the company was receiving mail cancelations on unfilled orders and returns of rejected shoes, the president was urged by the junior executives to adopt a policy of refusing to recognize cancelations and of forcing customers by lawsuits to honor their contracts.

The president realized that these officials were sincere in their attitude. The situation had a demoralizing effect on the executives in charge of purchasing, planning, production, and sales. They were discouraged, when nearly all the orders which had been secured and filled were canceled by customers with inadequate excuses or no excuses at all. If the company permitted this condition to continue without definite attempts to correct it, the morale of the entire organization was likely to be harmed. To these executives it seemed conclusive that the company should have recourse to the law courts to secure redress.

It appeared to the president that the company had just grounds for taking legal action against its customers, and he was confident of favorable verdicts in all cases which might be brought to trial. On the other hand, he knew from experience that satisfactory business relations could not be built up with lawsuits as a foundation.

The expense and time involved in conducting lawsuits also had to be considered. It was necessary to establish specific losses in each case before a suit for recovery could be instituted. In other words, the returned shoes had to be sold and the difference between the actual selling price and the original price had to be proved. Analysis of the company's accounts showed that practically all the cancelations had been received from customers whose individual orders ranged from \$500 to \$1,500. Because of the small amounts involved in individual cases, the

cost of the lawsuits was certain to be an excessive proportion of the amount recovered.

In formulating his opinion the president also weighed the fact that, if no prosecutions were undertaken by the company, all its customers subsequently might decide that they could cancel future orders with impunity. This assumption might cause them to place excessive orders at a later time, and thus encounter the same conditions of overexpansion. Customers might consider lawsuits, however, an unfair means of securing an advantage when conditions uniformly made it difficult or impossible for them to fulfil their obligations. The majority of the company's customers were certain to look upon court proceedings undertaken during a period of wide-spread depression as being entirely different from similar proceedings undertaken during normal periods to enforce the company's rights in the usual routine of business. Such an attitude on the part of retailers would be detrimental to a company's future sales.

The president concluded that suits should be instigated against a few of the most flagrant offenders. In this way the company should secure, at minimum expense, the benefit of test cases useful in pointing out to customers its legal rights under these circumstances. A few cases of prosecution were not expected to affect adversely the good-will of the majority of the company's customers but rather to show them the need of more cautious purchasing in the future. They also would demonstrate in a significant way to the junior executives the high cost of the proceedings in relation to the benefits secured.

Following this decision, three customers were sued for losses caused by cancelations of their orders, and in each case the company eventually secured a favorable verdict. One suit, which was appealed, was for \$700, and cost in the end approximately \$1,600. Another, for a loss of \$400, involved costs to the company of \$900. Each one was subjected to many delays, and several executives were required to make three or four trips to the court to testify. By the time these cases were settled, the junior executives had the satisfaction of knowing that the company was in the right, but that it was useless to have recourse to the law courts for small losses. They were encouraged by the favorable verdicts, but had had enough of court proceedings to realize that the losses resulting from can-

celations would have to be borne by the company. The president concluded, furthermore, that the outcome of the suits had had the desired effect upon the customers. Early in 1923, when orders for the fall trade again reached a high point, each customer was notified that the company did not want any orders which the customer did not intend to accept. In previous years numerous shoe retailers had canceled orders whenever the price of leather dropped even slightly. In the summer of 1923, however, although the price of leather had dropped materially below the price in February of that year, the company had no difficulty from cancelations by its customers.

19. THE HARRISON STEEL CORPORATION—CANCELLATION OF TONNAGE CONTRACT¹

Early in August, 1920, the Harrison Steel Corporation received a request for cancellation of a tonnage contract from the Tyler Warehousing Corporation, one of its largest customers. A long-sustained period of prosperity and high prices was just ending, and the steel industry was beginning to feel the depression which had already become evident in some other businesses. For the preceding 18 months there had been a steady demand for steel and a continual rise in prices. As a result there had been practically no cases of cancellation of orders by customers. In fact, customers who ordered on the tonnage basis to resell had fallen into the habit of placing their orders with several steel manufacturers for perhaps three times the amount of steel that they expected to need, in order to obtain sufficiently prompt deliveries from some source to satisfy their own customers.

This contract which the Tyler Warehousing Corporation wished to cancel was dated May 10, 1920, and called for the delivery of 500 tons of structural shapes monthly for a period of six months. The specifications for the shapes, under the terms of the contract, were to be given by the purchaser each month in anticipation of delivery six weeks later. Two of these monthly instalments had been shipped by the Harrison Steel Corporation and accepted by the Tyler Warehousing Corporation. The third instalment was in process of manufacture under the specifications. The Tyler Corporation was ready to

¹Harvard Business Review, vol. 2, p. 238; based on Copeland, p. 272.

receive this third instalment, but requested that the remaining three shipments be canceled because of lack of orders on the company's books.

In the steel trade there are two types of orders. The first type is given by customers with a definite project in view, requiring a definite product. The amount of the order, the date of delivery, and the specifications for the steel are all given at the time of ordering. The second type of orders, called tonnage contracts, is usually given by jobbers and warehousemen who expect to resell the steel, but do not at the time know in just what form it is wanted. Therefore, these orders include only a contract to take a certain number of tons to be delivered in instalments at stated intervals, for which the specifications will be presented to the steel company a certain time before the delivery date.

In addition to these major forms of contract, there was formerly used the "scale contract," which was an agreement to buy and sell a given amount of steel, the price to be periodically changed in accordance with the price of some commodity entering into the steel. This contract is now very rarely used in the steel industry.

It is with the second type of orders that most of the cancellation trouble arises, for it has become customary for steel manufacturers to accept cancelations of these contracts,¹ if it is done before giving specifications for manufacture. The basis for this development is that the manufacturer cannot begin to make steel until he has received specifications. This custom is, however, a considerable burden on the manufacturer. Not only is he held to the contract price on deliveries in case the price rises, but if the price falls he must cancel the order on the request of the buyer. Thus he cannot gain the benefit of a rising market, nor is he protected on a falling market. The buyers cannot be given the entire blame,² for the manufacturers have been said to be somewhat at fault in the past. First, because some manufacturers have sold without regard for their ability to deliver. Sec-

¹It is conceivable that the courts may at some future time allow the custom of cancellation (if continued) to be read into the contract (Cf. Williston, on Contracts, Sec. 653). To date this has not been done. In other respects the tonnage contract is recognized as a valid, binding contract.

²*Iron Age*, January 15, 1914, page 213. Editorial.

ondly, it is the opinion of some steel men that the custom of guaranteeing prices against a decline, which arose a few years ago when the trade was somewhat disorganized by the consolidations, and buyers were of the opinion that prices were moved up or down as the United States Steel Corporation wished, was originally a chief cause of the tacit permission to cancel in case of a drop in prices.

Since the decision in this case was likely to form the basis for a precedent for the Harrison Steel Corporation, it had to be given careful consideration and analysis. The chief advantage of refusing cancellation seemed to be that it would give a basis for the establishment of a firm policy of refusing to cancel tonnage contracts. This would relieve the manufacturer of the difficulties previously outlined, and give the corporation a certain amount of protection against excessive loss because of a price drop. This would be of particular advantage to the internal management of the company because the size of the labor force and amount of overhead to be incurred over a period of time is decided chiefly on the volume of unfilled orders on the books. Thus if the contracts were binding an immediate upset in carefully laid production plans would not be imminent whenever prices tended to decline.

On the other hand, had it refused to cancel the remainder of the contract, the Harrison Steel Corporation would have run counter to the rather well-established custom of the trade. If cancellation were allowed in this case, other customers could not consistently be refused. The function of the Tyler Warehousing Corporation and similar customers, who bought on a tonnage contract for future resale, was to carry standard structural shapes for immediate delivery on small shipment. Neither of these functions could be adequately carried on by the steel manufacturer, yet they were necessary. In case of a refusal to cancel, these customers would be loaded with steel which they could not dispose of. Financial difficulties would possibly result. Finally, there was the fact to be considered, that, by refusing cancellation, the Harrison Steel Corporation would incur a considerable amount of ill-will from its customers and, under severe competitive conditions, would be likely to lose many of them. The Tyler Company was one of a group of these desirable customers.

One method to meet the situation would be that of the United

States Steel Corporation just previous to this period. Through various economic services and its own statistical forecasts, this company in 1920 concluded that the exceedingly good business of the preceding years could not be expected to last. It therefore established a policy of maintaining relatively low prices, accepting only those contracts which were for definite projects and for which the specifications were given at the time of ordering. Thus, although it lost some orders of those customers who wanted prompt deliveries, and were willing to pay high prices, the company received orders from people who were fundamentally sound and were ordering for use rather than for resale and speculation. Its record of cancelations in the crisis period was thus much lower than that of the independents who accepted the unsound and "pyramided" orders. It has further been suggested that a shortening of the contract period would decrease the elements of speculation and overordering, the cause of most of the trouble. Both of these last suggestions, however, would have to be put into effect in advance of a period of stress.

20. HENSHAW BREAKFAST FOOD COMPANY—REFUSAL TO ACCEPT ORDERS FROM RETAILERS IN 1920 IN EXCESS OF THEIR IMMEDIATE NEEDS

In the latter part of 1919, as the result of the advance in prices of the products manufactured by the Henshaw Breakfast Food Company, the amount of credit allowed to retailers had been increased. If the existing credit limits had been maintained, the quantity of goods which the retailer was allowed to buy on open account would have been decreased. In the first months of 1920, it was suggested by several of the executives of the company that the sales department should instruct its salesmen not to accept orders from retailers in excess of the quantity normally purchased by them. As a result of the existing prosperous business conditions and the rapid increase in prices, retailers were buying in advance of requirements in order to insure for themselves a sufficient supply of goods at all times, and in order to make a speculative profit on the products purchased.

The Henshaw Breakfast Food Company manufactured several varieties of factory-cooked breakfast foods. All these cereals were made of the best materials obtainable and were believed by the

executives of the Henshaw Breakfast Food Company to be of a quality superior to other breakfast foods on the market. Because of the greater costs of manufacture, the prices quoted necessarily were higher than the prices of competitive products.

The company maintained branches in large cities in all parts of the United States and sold directly to retailers. In a few distant territories the products were sold to wholesalers, but these were exceptions to the general policy followed by the company. Salesmen were in the employ of the individual branches and did not report to the home office of the company. Each branch maintained its own stocks and made deliveries by truck to retailers in the neighboring territory. Urban retailers were visited by salesmen once a week. Suburban and rural customers were visited less frequently but at least once a month. The average order from retailers varied from \$5 to \$50.

It had been the general policy of the company to allow a liberal margin of profit and to aid retailers in every manner possible in selling the company's products. National advertising was conducted on an extensive scale in order to create a consumer demand. This advertising aimed to create consumer acceptance, that is, to familiarize consumers with the Henshaw name. This was in contrast to the policy of some of the company's competitors, whose advertising was designed to create insistence on the part of the consumer for their product. Missionary salesmen were employed by the company to visit the retailers from three to six times a year and furnish them with such help as they desired. Free window displays were distributed and advice as to their most effective arrangement was given. These salesmen also advised in regard to accounting methods, purchasing policies, and arrangement of stocks. The company's regular salesmen arranged with each retailer to give free samples of Henshaw products twice a year to the retailer's customers. They set up a table and served the store's visitors the different cereals with cream and sugar. This policy resulted both in useful advertising of the Henshaw products and in creating good-will between the retailer and his customers.

A rigid credit policy was laid down by the home sales office to be followed by all branches. Retailers were allowed a maximum amount of credit depending upon the ratings given them by a commercial credit agency. Special provisions were made for retailers

who were commencing business. No branches or salesmen were allowed to give credit in excess of these amounts.

The executives at the home office, who suggested to the sales department that the size of retailers' orders be restricted, maintained that the policy would prevent overstocking on the part of retailers. They stated that the existing prosperous business conditions could not continue permanently and that such a policy, therefore, would reduce the number of cancelations and the amount of bad debt losses when depression occurred. Furthermore, when prices declined, the retailers' losses would be less if their stocks were small. The perishable nature of the company's products made such a policy especially necessary. It was important that consumers purchase the food when fresh, and that the containers should not become soiled and bruised as they did if the products were kept in stock over a period of time. Since deliveries were made by truck from the branches, the retailers' needs could be met promptly at all times.

On the other hand, such a policy might incur the ill will of the retailers, who desired to be sure of having adequate stocks at all times and also wished to protect themselves against price advances. If the Henshaw Breakfast Food Company refused to sell as large a quantity of its products as the retailer desired to buy, it was possible that competitors of the company might increase their sales at the expense of the Henshaw Breakfast Food Company.

The sales department decided to restrict the orders accepted from retailers to the quantity that could be used during the period between the salesmen's calls. This information was sent to the branches, which, in turn, were to give definite instructions to each salesman. A retailer was to estimate the quantity of the company's products that could be sold before the salesman called again. If the salesman found upon his second call that the retailer still had a large quantity of products on hand, he was to restrict accordingly the size of subsequent orders. Although the sales force was given definite instructions regarding this policy, its application to individual customers was to be left to the judgment of each salesman.

The executives of the Henshaw Breakfast Food Company reported that the policy had been extremely successful; little opposition had been met on the part of the retailers, and the salesmen

were able to convince those retailers who did protest that the policy was for their own good. In the latter part of 1920 and during 1921, the company's cancelations were inconsequential; the retailers' losses when the Henshaw Breakfast Food Company reduced its prices were small. Consumers always had received fresh products in perfect containers.

21. LACEY AND COMPANY—PARTICIPATION IN FOREIGN TRADE FOLLOWING THE ARMISTICE

Lacey and Company manufactured insulated copper wire and cable used for electrical purposes. The product varied from small insulated wire intended for portable lamps to heavy triple-armored ocean cable. The company's annual sales were about \$4,300,000, which included \$350,000 export. In its early development the company exported little, but during the World War it began receiving a larger number of foreign orders. At first shipments were always accepted and paid for promptly by the foreign customers, but in 1920 and 1921 the company had some difficulty in securing acceptance and payment for the goods, after they had been shipped.

Usually foreign orders of the company were handled through a New York bank having branches in the country to which the goods were being sent. In most cases a 60-day or 90-day draft accompanied the documents. As long as the exchange rates remained at or close to par, these drafts were not only accepted by the foreign buyers, but paid promptly. When the exchange of most of the foreign countries was at a discount, however, and a general business depression had set in, the foreign buyers had more and more difficulty in meeting their bills and in several instances either the goods were not accepted upon arrival or the drafts were not paid after they had been accepted.

For two or three years a Belgian firm had been buying electric wire and cable from Lacey and Company. This customer always had honored its drafts. In the spring of 1920 it gave the company orders for \$14,000 worth of high-grade wire. Elaborate tests were required and the plant was put to considerable expense to fill the order. On July 11, when two-thirds of the order had been packed in cases and was ready for shipment, Lacey and Company received a cablegram asking if immediate shipment

was to be made. The company replied in the affirmative and the entire shipment was sent off two days later. On July 20, another cablegram arrived canceling the order. Since the wire was manufactured according to foreign standards, it was of no value in the domestic market. The company was unable to find another foreign purchaser and in December, 1921, the wire was still in storage in Brussels.

A slightly different situation occurred in Portugal a few months later when payment was refused on \$13,000 worth of wire which had been ordered by the firm of Moro Gomezetto. This firm previously had paid its bills promptly, but when the rate of exchange went against it, although it received the wire and accepted the draft, it failed to make payment, when the draft was due.

These instances were more or less typical of what had occurred on a number of foreign shipments. Although cancelations also had occurred in the domestic market, they were not complicated by heavy ocean freight rates. The credit department, which had not foreseen the effects of the business depression on its foreign customers, laid the blame on unfavorable rates of exchange. At the end of 1921, Lacey and Company had thousands of dollars' worth of wire, manufactured according to foreign standards, stored in warehouses in foreign countries. On other lots of wire, which were in the possession of customers, the firm held drafts which had been dishonored. For these reasons the company was considering the advisability of discontinuing its foreign trade.

In the United States it was possible to turn over such cases to an attorney to secure some form of adjustment. In foreign countries, however, when a resort was made to litigation, Lacey and Company feared that the native lawyers would sympathize with their fellow countrymen and that the court decision would go against an American firm.

Several times the company reshipped lots of wire to other countries having the same standards for electric cables. Almost every time, however, the rate of exchange was against the United States and in only three instances was the company able to dispose of its product even at a 30% reduction in price after paying additional freight rates and storage charges.

The management was convinced that if the company should decide to continue its foreign trade, it must discontinue all ex-

porting until the rates of exchange were more favorable. Once these rates returned to par, the shipments being held in foreign countries could be disposed of at a price somewhere near the cost of manufacture. This step would require the payment of large sums of money for storage charges, however, and probably no profit could be realized on the sale of these goods. At the same time, such a policy would leave the field open to European competitors whose wage rates were lower than those in the United States.

Lacey and Company originally manufactured electric wire and cable only for domestic trade; these sales were of sufficient volume to enable it to maintain a profitable business without entering foreign markets. Its foreign sales had been but a small proportion of its total volume, and it never had considered them important enough to warrant the establishment of a sales force in the foreign field.

Its export shipments had to be treated as special orders not only because of the use of the metric system in many European countries but also because of the different standards required or permitted by foreign laws. The Board of Fire Underwriters had laid down definite specifications for insulated wire used for electrical purposes in the United States. For example, on all Number 14 copper wire $5/32$ of an inch insulation was required. The requirements were also definite as to what constituted satisfactory insulation and the size of wire required for specific loads. In most foreign countries, however, the requirements were less strict, and insulation of approximately $4/32$ of an inch on Number 14 copper wire was accepted as satisfactory. Consequently, if Lacey and Company continued to sell in foreign markets, it would have had to manufacture insulated wire according to these foreign specifications, for American standard wire was too high in price to enable the company to compete with foreign manufacturers.

The company took the stand that it had not developed the domestic market to the greatest extent and that rather than waste time in nursing along a foreign field under the difficulties of unfavorable exchange rates and a business depression, it had better devote its efforts to building up sales in the United States. Lacey and Company therefore decided to give up its foreign trade.

22. GIBRALTAR SUSPENDER COMPANY—LENIENT CREDIT POLICY FOR FOREIGN CUSTOMERS DURING DEPRESSION

In 1920, the Gibraltar Suspender Company had a well-established foreign market that had been built up over a period of more than 20 years. The company's products had been sold in the past in practically every country of South America, Europe, and the East, but since the European market had been seriously depressed as a result of the war, the countries in South America constituted, in 1920, the company's most important foreign market. The year 1920 was abnormal, inasmuch as the volume of foreign sales, which normally were about 20% of total sales, was slightly greater than the volume of sales in the United States. The period from 1919-1920 was one of great activity in all manufacturing and exporting businesses. Prices were abnormally high but continued to rise to still higher levels.

In the summer of 1920, there was a serious deflation in prices. Retailers and wholesalers throughout the United States were overstocked with high-priced products, which it was difficult to sell even at prices less than cost. The wide-spread depression which ensued extended also to South America. Retailers there were overstocked with commodities which had accumulated after the beginning of the war. Inasmuch as transportation during and after the war had become increasingly difficult, the South American merchants had accepted all commodities which they had been able to secure and, consequently, the market had been flooded with products from the United States.

During the period of declining prices in 1920, the Gibraltar Suspender Company had large shipments on the way to South America. The usual procedure with its foreign orders was that the products were placed in storage in the South American city from which they had been ordered; the bills of lading were sent to the bank with which the company had business relations; and a draft for the amount of the order was sent to the customer. When the customer paid the draft at the bank, he received the bills of lading, with which he obtained the articles from storage.

Coincident with the decline in prices, the South American currencies depreciated sharply. Approximately 50% of the buyers of the company's products were opposed to the acceptance of them at the previous high prices, and furthermore, objected to

the payment of the company's drafts at the lower rate of exchange. They said that shipments had been delayed for several months after their orders had been placed, and that the lack of prompt fulfilment of their orders had placed them in a difficult situation. Two courses of action were open to the company: to force as many as possible of the stored articles upon its customers at the original prices and to return to the United States the portion that was not accepted, or to attempt an adjustment of losses with its customers.

There were several disadvantages to the first policy. There was, first, the loss of the transportation charges on all articles returned. In addition, since the domestic market was also in a depressed condition, there was no outlet for the products in the United States. There was danger, furthermore, of deterioration of the rubber in the products before the returned shipments were received, and there was, also, the probability of arousing antagonism among customers, if the company attempted to force them to accept their orders at the previous high prices. Such a course involved loss of orders in the future, when market conditions improved.

There were fewer disadvantages in the policy of making adjustments for losses. The company expected to lose part of its payments. Although the amount of the sacrifice could not be determined in advance, it was probably less under this plan than under the first policy. There were advantages, furthermore, in the saving of transportation costs, of losses from deterioration, and of losses from a resale in the depressed domestic market. The company realized that because of the uncertainties of transportation, there had been unavoidable delays. It anticipated, moreover, the promotion of good-will among its customers by its acceptance of part of the burden caused by decreased prices and depreciated rates of exchange.

The company decided, since it had been responsible in many instances for delayed shipments, that it ought to share part of the losses caused by these delays. Where the buyers objected to the acceptance of their orders, the company, accordingly, agreed to share their losses, and offered to accept payment at a rate of exchange more favorable for the customer.

Each customer accepted this offer and came to an agreement with the company regarding the rate of exchange at which the

drafts should be paid. The rate of exchange was not the same for all customers, but was determined individually in each case where an allowance was made. The company then notified the banks to accept the payment of the drafts at the specified rates and to hold the foreign money until the company requested an exchange into currency of the United States. Arrangements of this kind were made with each customer who protested, and all drafts were honored. Each of these customers paid for the articles billed to him on the basis pre-arranged by the company and himself; the remainder, who had made no complaint, met their obligations without question in currency of the United States. The only total loss which the company sustained resulted from the bankruptcy of a customer in Porto Rico.

The proceeds from these drafts were left in the banks until the exchange arose. It was possible to obtain a low rate of interest on these deposits. The company expected a rise in the exchange when market conditions in South America improved. Since it was not in immediate need of the money, the payments in many cases were left in the banks for more than a year, during which the exchange was still low. In 1923, although the company had called for most of these payments, there were still a few held by the banks.

23. BURBANK PAPER COMPANY—SHOULD A COMPANY EXPAND ITS EXPORT SALES AT THE SAME TIME AS ITS DOMESTIC SALES?

When the Burbank Paper Company began the manufacture of crêpe paper and similar novelties, all its sales were made in a territory within a radius of 200 miles from the factory. After the product became established in this area, the company expanded its factory and extended its sales efforts to cover the entire United States. Crop failures and business depression usually did not occur in all parts of the country at the same time. By enlarging its selling field, therefore, the company secured the advantage of equalizing losses from poor territories with gains from those territories in which business conditions were more prosperous. The volume of sales also was increased through appealing to a larger number of prospective purchasers. The advantages resulting from broadening its domestic market induced the company to enter foreign trade. In both the foreign

and domestic markets, it sold directly to retailers through its own salesmen. All prices were f.o.b. factory.

The company planned its domestic sales requirements in advance. At the beginning of the year, the domestic sales department estimated the year's requirements by months. On the first of each month, the managers of the production and sales departments made a final adjustment of the schedule for the current month, approved the schedule for the next month, and tentatively modified the schedule for the third month. Foreign sales, however, were not anticipated, as the export department was expected to take care of any surplus that existed in the domestic market, and it was difficult to estimate the sales in foreign markets which were being developed.

In 1919, the orders for paper novelties in both the domestic and foreign markets were greater than the factory could supply. To avoid taking orders which could not be filled, it became necessary, therefore, to budget all sales. By that time, the company had established a branch in England and was selling its products in Egypt, India, China, Japan, Australia, and Latin America.

Domestic production schedules could be modified if branch managers approved the requests of customers for special orders or for immediate deliveries. The foreign department, however, was allowed to exercise this privilege but rarely, as it was the aim of the company to introduce standard lines abroad as far as possible. The urge to grant special requests to foreign customers, who were several thousand miles away from the factory, was not as great as the desire to satisfy customers in the domestic market.

During the depression of 1921, when the Burbank Paper Company was striving to secure enough sales to maintain the operation of its factory, the privilege of modifying its schedule by special orders was given to the export department. When prosperity returned in 1922, the company received so many special orders from both the foreign and domestic sales departments that filling standard orders frequently was delayed from three to six weeks. It was decided, therefore, to withdraw from the domestic sales department the right to modify the production schedule by accepting orders for special materials or immediate delivery. Recovery from the business depression was not so rapid in the foreign field; the rates of exchange in southern and central Europe

and South America were not favorable to American exports; and a month often elapsed between the sailing dates of vessels for a foreign port. For these reasons, the foreign department was allowed to continue to accept special orders and to receive priority when it was necessary to secure early shipment to synchronize with boat sailings.

In 1921 foreign sales constituted roughly one-fifteenth of the total volume of the Burbank Paper Company. By the end of 1922, its foreign sales had increased until they were one-tenth of a total volume of over \$12,000,000. During the first five months of 1923, the domestic sales organization had sold the entire output of the factory allotted to it for that year. As a result of entering new territory, foreign sales expense was about 5% greater than domestic sales expense, but it was expected that this differential would decrease as the foreign sales became greater. Under these conditions, the Burbank Paper Company faced the issue of whether it should expand its existing export sales when the total output of its factory could readily be absorbed by the domestic market.

The Burbank Paper Company was convinced that in the long run it would be able to increase its volume of sales to a greater extent by continuing in foreign trade than if it confined its sales efforts to the domestic market. Consequently, it decided to develop its foreign sales on the same basis as its domestic sales.

C. ADVERTISING AND THE BUSINESS CYCLE

24. THE HAMMETT MANUFACTURING COMPANY—METHODS OF RELATING ADVERTISING TO THE BUSINESS CYCLE¹

The Hammett Manufacturing Company, which is located on the outskirts of a large eastern city, manufactures an extensive line of paper products, including labels, jewelry boxes, tags, tissue paper, and paper articles for the holiday trade. For the purpose of control these products are classified into two main divisions—(1) the ultimate consumer line, consisting of merchandise sold to retailers for resale; (2) the industrial line, consisting of merchandise sold to large consumers for their own use.

¹*Harvard Business Review*, vol. 1, p. 378.

In the past the company has been faced with numerous production and distribution problems because of fluctuations in its volume of manufacture. To overcome these difficulties it has added lines from time to time, and it has established a committee to develop new merchandise for release in periods of depression. This latter plan has met with considerable success. In the case of tags, for example, it has been found that customers who would not buy ordinary tags were willing to buy tags with new and attractive designs. The company also has related its building program, purchasing and sales plans to the business cycle. In periods of prosperity building activity is curtailed, for costs of labor and material are high; purchases are made on a hand-to-mouth basis, although proper allowance is made for the production needs; and new salesmen are hired and trained. In periods of depression, on the other hand, building activity is carried on where advisable, for costs of labor and material are comparatively low; purchases are made with less conservatism; and the salesmen who have been trained in the time of prosperity are sent out to obtain business.

For many years the Hammett Manufacturing Company had been a small user of advertising space. In 1919, however, it felt that competition and the trend toward increased publicity justified the employment of advertising on a larger scale, and this in turn necessitated the adoption of definite advertising policies. In this connection, the question arose as to when and in what amounts the advertising appropriation should be utilized. There appeared to be three alternatives: first, to advertise continuously and, allowance being made for normal growth, to spend an equal amount each year; second, to advertise heavily in periods of prosperity and lightly in times of depression; and third, to advertise heavily in times of depression and lightly in times of prosperity.

The chief advantage of the first proposal is the cumulative effect which would be gained from steady repetition. In a period of depression, however, the volume of advertising would probably be of little assistance in effecting the introduction of new lines and in stimulating the morale of the newly added salesmen. Again, in a period of prosperity when the company has all the orders it can take care of, the volume of advertising would be in excess of what was needed.

The second alternative aims to make a strong appeal when the consumer is in a prosperous condition and sales resistance is low. This practice, which is made easier by the readiness of funds during prosperity, is followed by many manufacturers. Its weakness lies in the fact that it is most effective in securing orders when the company needs them the least, and it is least effective in securing orders when the company needs them the most.

The third alternative seems to combine a minimum of disadvantages with a maximum of advantages. From the standpoint of cumulative effect, it would probably not have the force of the first alternative. On the other hand, it would tend to assist in securing orders when the company was most in need of them, and at the same time it would increase the prestige of the company over non-advertising competitors. Further, the third alternative would coincide with the company's cyclical policies. Increased advertising would be essential to the introduction of new lines in times of depression and it would be effective also in stimulating the morale of the salesmen.

Largely for these reasons the Hammett Manufacturing Company favored the third alternative. It adopted a plan requiring that advertising appropriations should be formed in accordance with a five-year outlook and that annual amounts based on average conditions should be set aside. In good times the advertising was to be exceedingly moderate, just enough to retain the momentum and to keep the Hammett name and merchandise before the public. In periods of depression, however, all forms of publicity were to be employed to the fullest degree, and the advertising appropriations which were not used during the time of prosperity were to be utilized.

In accordance with this decision, the Hammett Manufacturing Company advertised lightly in the prosperity years of 1919 and 1920, but in 1921 increased the advertising appropriation to 3% of sales. In 1922 business conditions were slightly improved, with the result that the advertising appropriation was decreased to about 2% of sales. Since the company expected that business conditions in 1923 would be better than those of 1922, it reduced the advertising appropriation to 1.5% of sales.

The effectiveness of this advertising policy cannot be judged finally until it has stood the test of several business cycles. Thus far, however, the results have been satisfactory. In 1919

and 1920 sales were maintained with a minimum expenditure for advertising, and during 1921 and 1922 the sales did not decline in the proportion common to other concerns. Further than this, the morale of the sales force was greatly stimulated by the advertising, and it is believed that this factor also assisted the company to maintain a high rate of production and to retain practically all its factory personnel. Finally, indications are that the cost per advertising return in the time of depression was not greater than the cost per return in the period of prosperity.

25. WAITE ADVERTISING AGENCY—CREDIT RISK OF AGENCY IN ITS PAYMENT TO PUBLISHERS FOR CLIENTS' ADVERTISING

The Waite Advertising Agency managed the advertising of the Williams Phonograph Company, whose sales reflected the general prosperity of 1919. The advertising appropriation had been increased and the plant enlarged. Extensive inventory commitments were undertaken in order to satisfy the additional demand for phonographs, but in the summer of 1920 sales declined slightly more than usual at that season. On September 1, the Waite Advertising Agency learned from its clients' banks that the company's financial condition was weak. Since the agency was financially responsible to publishers for the space used by its clients, the president had to decide whether to place the usual contracts for phonograph advertising during the month of October, to reduce the amount, or to discontinue the advertising entirely.

The Williams Phonograph Company was incorporated in 1912, and in 1914 an aggressive sales policy was instituted. Cabinets and motors were purchased from other manufacturers, and machines were assembled in the factory. The plant was equipped to produce 20,000 records per day. Machines were sold under a nationally advertised trade name to wholesalers who were granted exclusive territories. Among the competing manufacturers, two were of outstanding strength and prestige. The Williams Phonograph Company was one of several companies which endeavored to secure the third largest volume of sales. Its growth was rapid and sales were \$1,500,000 in 1917. During 1917 and 1918, the Government purchased nearly all the output of one of the leading manufacturers, and since that producer had

never been able to fill all orders, more phonographs than ever were sold by the others.

In 1919, prosperity stimulated the sale of phonographs, so that all producers operated at capacity. The Williams Phonograph Company made unusual profits with sales of \$8,500,000. Net income was \$782,000, compared with \$129,000 for 1918. The sum of \$44,000 was added to the surplus from operations in 1918, and \$697,000 in 1919. The balance sheet on December 31, 1919, was as follows:

WILLIAMS PHONOGRAPH COMPANY—BALANCE SHEET AS
OF DECEMBER 31, 1919

ASSETS	LIABILITIES
Plant	\$ 770,000
Trade-Mark and Good-Will	731,000
Investments	419,000
Bills and Accounts Receivable	1,523,000
Inventories	1,508,000
Cash	170,000
Preferred Assets	19,000
Reserve against Mortgage	318,000
Total	<u>\$5,458,000</u>
	Total
	<u>\$5,458,000</u>

Sales for 1920 seemed likely to be greater than for 1919. Contracts for cabinets, motors, and supplies were made in excess of the quantities for 1919. To insure an adequate supply of cabinets, orders for future delivery were placed with 25 manufacturers.

The advertising appropriation, increased in proportion to the growth in sales, was \$250,000 in 1920. It provided for a campaign of national advertising in magazines to establish the trade name, and newspaper advertising to stimulate the sale of records and to provide publicity for the retailers. The greatest volume was to appear in the fall when sales were normally at their peak.

The agency rendered bills on the first of each month for the advertisements that had appeared during the preceding month. Publishers of magazines were paid by the agency at the end of the month in which the insertion had appeared, and the newspapers on either the fifteenth or the twentieth of the month fol-

lowing the date of insertion. Thus the agency was reimbursed immediately for bills incurred for its clients. Space had to be secured from four to eight weeks in advance of publication, so that the agency actually became responsible in advance for space payments. The customary commission of 15% of the cost of space used was charged to clients. It was the policy of the agency to discontinue the advertising of any client whose bill was not paid promptly and never again to extend financial aid.

During the summer, indication that demand for phonographs had declined was given the president by the decrease in sales of another phonograph company which advertised through his agency. Summer decreases, however, were normal and a revival was expected in the fall. On September 1, the desired increase had not developed. The president of the Waite Advertising Agency knew that the Williams Phonograph Company had made commitments for raw materials and cabinets in preparation for an unusual demand. When he learned from the company's banks that it was in need of additional working capital to carry its inventories, he advised curtailment of operations and disposal of the inventory already in stock. This counsel was disregarded. The ability of the company to pay its charges for subsequent advertising was in doubt.

If the company was dependent upon increased sales to avoid financial embarrassment, it was of particular importance that advertising, as an indispensable method of securing sales, be continued. Without advertising, the company could not profit fully from the expected fall demand. A complete cessation of publicity would alarm creditors at a time when confidence in the credit of the company was necessary. Cancellation of all advertising involved the agency's loss of further contracts with a client who had been profitable. Although the Williams Phonograph Company ignored the agency's advice to retrench, the president of the agency had confidence in the ability of its officers to guide the company through its difficulties. He did not foresee the violence of the decline which already had begun. Recognition of the agency's obligation to serve its client induced the president to continue the company's advertising.

Doubt was expressed whether or not the total amount of advertising should be continued. Original plans specified a monthly expenditure of \$30,000 during the fall. A reduction allowed

sufficient publicity to keep the name before the public, whereas total cessation was certain to indicate to its creditors the company's seriously weakened financial condition. This action also practically guaranteed retention of the good-will of the company. A reduction was expected partially to safeguard the agency against loss in case conditions did not improve. It seemed feasible to risk one or two months' advertising, since, if sales continued to decline, it was always possible to discontinue all publicity. With the consent of the company, on September 1, the president of the agency reduced the amount of future advertising by one-half.

During the month of September, the company secured additional working capital by an issue of \$1,500,000, 8% gold notes, due August 1, 1923, which were offered to the public at 98½.

On October 1, the agency's advertising bill was paid in full, and reduced space was contracted for in publications for November and December. During the fall months, conditions rapidly became worse, until the phonograph market was disorganized seriously. Demand for phonographs was negligible and prices were cut by retailers in an attempt to reduce inventories. One important retailer offered machines usually sold at \$125 for \$47.50. Since phonographs were sold frequently on partial payment plans, retailers were in a difficult position. If prices were reduced, some customers who had made a few payments could buy another machine for less than the amount of the remaining payments. Many purchasers defaulted for this reason, and others because of lack of funds. Retailers were forced to take back quantities of machines.

By the middle of October, the company needed cash urgently. It attempted to liquidate its inventory of phonographs by reduction of prices. This caused serious difficulties with its distributors. Wholesalers demanded rebates to the amount of the decreased value of their inventories caused by the price reduction. The retailers in turn demanded like rebates from the wholesalers. The company was unable to grant rebates, and all distributors became dissatisfied. In one city, the company accepted the return of \$10,000 worth of phonographs from a retailer who threatened to offer them at any price that insured their disposal.

The advertising bill of November 1 was not paid, and in

accordance with its usual practice, the agency immediately discontinued further advertising for the company. Space already had been purchased, however, for November and December for a total amount of approximately \$50,000. The president of the agency effected a settlement by the acceptance of a note for \$25,000 and a stock of machines for the remaining \$25,000.

On December 15, 1920, a creditor's committee was formed. The weakness in the company's financial position was shown by the balance sheet on December 31, on which commitments under contract did not appear.

**WILLIAMS PHONOGRAPH COMPANY—BALANCE SHEET
AS OF DECEMBER 31, 1920**

ASSETS	LIABILITIES
Plant	Common Stock.....\$2,068,000
Trade-Mark and Good-Will	Preferred Stock..... 1,533,000
Investments	8% Debenture Stock 456,000
Accounts Receivable from Subsidiary ..	8% Gold Notes.... 1,500,000
Bills and Accounts Receivable	Mortgages Payable.. 6,000
Inventories	Interest, etc., Ac- crued
Matrices	73,000
Cash	Bills and Accounts Payable
Preferred Assets....	Taxes Due..... 72,000
Reserve Against Mortgages	Royalties Payable... 26,000
Total	Sundry
	15,000
	Notes Receivable Discounted
	245,000
	Reserve for Taxes... 50,000
	Sinking Fund for 8% Debenture Stock.. 160,000
	Surplus
	162,000
	Total
	\$8,781,000

The notes held by the agency were paid, and during the course of two years the inventory of phonographs was liquidated without loss.

**26. MCGREGOR MANUFACTURING COMPANY—ABANDONMENT OF
ADVERTISING CAMPAIGN IN ORDER TO CONSERVE RESOURCES**

Early in 1916, the McGregor Manufacturing Company decided to manufacture a tooth paste in addition to the dentists' supplies for which it was noted and to secure the thorough dis-

tribution of its new product by a traveling sales force and by consumer advertising. A three-year program was mapped out and returns on the investment were not contemplated before the end of this period. The break in diplomatic relations with Germany in 1917 and the rising prices of raw materials needed for the products of the McGregor Manufacturing Company caused the directors to consider the advisability of conserving the resources of the company by the discontinuance of the advertising and sales campaign.

The McGregor Manufacturing Company had been producing dentists' supplies for many years. It was a close corporation built up out of earnings and its products were regarded highly by their users. Distribution was secured through dental supply companies and through local distributing companies owned by the manufacturer in several large cities of the United States. The total sales averaged about \$8,000,000 per year. Tooth paste had been produced in small quantities but was sold only locally in the region of the city in which the McGregor Manufacturing Company was situated. The sales of this product were less than 1% of the total.

Prior to 1911, the McGregor Manufacturing Company was capitalized at \$1,000,000, but in that year, a 400% stock dividend was declared, which raised the total capitalization to \$5,000,000. The increased equity of the stockholders had been secured through earnings over a period of years. It was contrary to the policy of the officers and directors of the company to borrow from banks and consequently, bills and accounts payable

**MCGREGOR MANUFACTURING COMPANY—BALANCE SHEET
AS OF DECEMBER 31, 1915
(In thousands of dollars)**

ASSETS	LIABILITIES
Plant, Real Estate, Pat- ents, etc. 1,579	Capital Stock..... 5,000
Bills and Accounts Receivable 1,275	Accrued Liabilities..... 11
Inventories 2,025	Bills and Accounts Pay- able 75
Cash 742	Contingent Reserve..... 100
Prepaid Expenses..... 14	Reserve for Bad Debts... 50
Total 5,635	Surplus 300
	Undivided Profits..... 99
	Total 5,635

represented merchandise obligations only. The balance sheet on December 31, 1915, is presented on the opposite page.

Although profits had been satisfactory for many years, including 1915, and although dividends ranged from 12% to 30% on the old capitalization, and from 2% to 6% on the increased capitalization, the president was of the opinion early in 1915 that profits could be increased substantially by marketing an allied product directly to consumers. A tooth paste was considered to be the most logical selection. Its use frequently was recommended by dentists and, consequently, the good-will of the McGregor Manufacturing Company would be carried over from its regular products. The sales of the latter might be increased correspondingly by the good-will accruing from tooth paste advertising. Since tooth paste had been produced to a small extent by the company, there were employees who were familiar with its manufacture. The product which had been sold under the name of the McGregor Manufacturing Company was not considered to be a satisfactory one on the basis of which the success of an extensive campaign was assured. Hence, tests were made in an endeavor to compound a new one with suitable properties. A non-medicated tooth paste was developed to sell at retail for 25 cents and to wholesalers for \$1.85 a dozen. After distribution was secured and advertising had been placed upon a normal scale, these prices were adequate to insure a substantial profit to the McGregor Manufacturing Company.

When the development of this paste was completed, the president consulted with Dobie Brothers, an advertising agency, which outlined a plan of action for the marketing of the product. The United States was to be divided into 30 sales territories. One territory at a time was to be concentrated on by a force of 30 salesmen. While the group was active in a section the dentists there were to be circularized, drug stores were to be visited, and newspaper advertising was to be used. The orders secured from drug stores on the basis of circularizing and advertising were to be cleared through wholesalers and were to serve as inducements for the latter to stock the product. As each sales territory was completed, one man from the group of 30 was to remain permanently to conduct the sales campaign. The United States was to be covered in 8 months, and at the end of 6 months national advertising was to be begun. The campaign was

launched in August, 1916, and in February, 1917, the sales of tooth paste had exceeded anticipations. A few national advertisements had appeared, and in all, \$225,000 had been spent in the campaign. Dobie Brothers was satisfied fully with the success which had been attained.

The directors of the McGregor Manufacturing Company, on the other hand, were concerned about the rising prices of silver and platinum¹ of which large amounts were necessary to supply their customers. The directors were opposed to the negotiation of bank loans in order to extend operations. Dobie Brothers admitted that the results of the advertising campaign would not be realized for 2½ to 3 years. In the meantime, expenditures for advertising were necessary to keep the tooth paste before the public and to create a sufficient demand for it in spite of competition of other manufacturers. The directors, with the exception of the president, were of the opinion that in accordance with tradition, the company should cease advertising and abandon the new machinery which had been installed for the manufacture of tooth paste, in order to conserve all possible resources to finance

¹AVERAGE MONTHLY PRICE OF SILVER PER OUNCE, 1916-1919

	1916	1917	1918	1919
January .....	.568	.771	.947	1.018
February .....	.568	.791	.901	1.018
March .....	.579	.754	.934	1.017
April .....	.644	.754	.990	1.018
May .....	.743	.762	1.005	1.087
June .....	.650	.700	1.003	1.121
July .....	.629	.822	1.003	1.080
August .....	.661	.879	1.010	1.131
September .....	.685	1.077	1.017	1.164
October .....	.672	.809	1.018	1.214
November .....	.716	.883	1.018	1.312
December .....	.758	.899	1.019	1.336

AVERAGE MONTHLY PRICE OF PLATINUM PER TROY OUNCE IN NEW YORK, 1916-1919

	1916	1917	1918	1919
January	\$ 90.05	\$ 87.83	\$ 105.92	\$ 104.85
February	90.00	103.75	107.68	100.43
March	90.75	103.33	108.00	99.20
April	83.10	103.77	108.00	99.85
May	80.50	105.00	106.27	102.00
June	78.13	104.75	105.00	105.80
July	63.60	103.88	105.00	105.90
August	62.56	104.55	105.00	107.60
September	84.25	104.15	105.00	128.70
October	89.75	104.00	105.00	132.21
November ...	101.25	104.52	105.00	136.74
December ...	86.87	104.38	105.54	151.35

increasing prices of raw materials, and to provide for any emergency which war might bring. They also desired to avoid the sale of stock or notes.

Dobie Brothers advised that the program be completed. The performance to date had been satisfactory; abandonment of the plan meant the loss of the amount expended for sales and advertising and the loss of the use of the additional equipment, appraised at \$100,000. Dobie Brothers realized that its interests were identical with those of the company, because if advertising recommended by an agency was unsuccessful, appropriations of the company were discontinued and the advertising agency lost that source of revenue. It was ordinarily preferable, therefore, to advise a client temporarily to discontinue a campaign and to resume it subsequently than to run the risk of failure and the company's permanent dissatisfaction with the agency or with advertising in general. Dobie Brothers realized also that the credit of the advertiser was an important factor, especially in the advertising of a new product. If a campaign was launched which was extravagant or beyond the resources of the manufacturer, the agency was compelled to meet the advertising bills of the publishers and was left in the position of an unsecured creditor of the advertiser. Failure might involve the loss of seven times as much as the gross profit to the agency, since the ordinary commission of the latter was 15%. Dobie Brothers appreciated that there was little danger to it in carrying the account of the McGregor Manufacturing Company because of the excellent balance sheet of the latter and hence, from this point of view as well as from that of anticipated results, it recommended the continuance of the campaign and the continuance of the manufacture of tooth paste.

In spite of the satisfactory sales already secured, and of the loss of use of the additional plant which had been installed, the directors of the McGregor Manufacturing Company decided to abandon the sales and advertising campaign. With the full realization that the good-will of the stores which had stocked the product and which were no longer supported with advertising in its sale might be lost, this step was taken in order to conserve resources so that rising raw material prices or war conditions could not deplete unduly the resources of the company in a period of emergency and uncertainty.

27. WATTERSON STOVE COMPANY—EFFECT OF CHANGING SEASONAL ADVERTISING IN PERIOD OF PROSPERITY

Until 1923, the Watterson Stove Company had expended its entire advertising appropriation during the months of August, September, and October. In January, 1923, the advisability of continuing this policy of concentrating all advertising in the early autumn was discussed. The company specialized in the manufacture of coal-burning stoves. The factory was located near a large metropolitan district, and most of its output was sold directly to retailers in this densely populated area. The company had advertised to consumers in three or four well-known metropolitan daily papers, which were in circulation in neighboring towns and rural communities as well as in the city in which they were published. Sales were made to exclusive agencies in the smaller towns, but in large cities the company sold to several retailers.

Because of the seasonal tendency of sales, other manufacturers of coal stoves also had concentrated their advertising in the fall. Coal ranges were purchased most extensively in that season, because this type of stove was used by the housewife during the winter. Oil stoves and gas ranges were used in the summer months because they gave off less heat and, consequently, such stoves were purchased in the spring.

To undertake spring advertising necessitated complete cooperation of the retailers, if the maximum results were to be secured. The retailers had to be interested in the new advertising and induced to carry a sufficient stock to meet any demand created. It might not be possible, however, to interest the retailers in a policy contrary to established custom. Should the demand not prove as great as expected, ill will might result if the retailers were compelled to carry larger stocks than necessary until the opening of the fall buying season. The company did not favor the extension of credit terms as a means of persuading the retailers to purchase in the spring. The only inducement that the company could offer was the possibility of increased total sales for the year. In the latter part of the summer because of the seasonal tendency of sales, the advertising encountered the least buying resistance on the part of the consumers. The Watterson Stove Company's advertising appropriation was not

usually more than \$40,000 per year. If the newspaper space which this amount could purchase was to be divided between two periods of the year, the effect might not produce sales of the same total value as formerly.

Advertising in the late spring and early summer months encountered little competition, since no other rival manufacturers advertised then. The president of the Watterson Stove Company hoped by means of spring advertising to advance his sales for that year beyond those of his competitors. If greater sales could be made in the summer months, the factory could be operated continuously on an even rate of production with lower unit manufacturing costs. The trade journals and statistical services in February predicted an advance in prices and an increase in building activities. Through extended travel and personal observation, the president reached a conclusion similar to that of the published sources of information about business conditions. The president was of the opinion that the demand for stoves in the fall of 1923 might be much greater than in the fall of the previous year. Because of the greater demand, and the higher wages likely to be paid to the workmen, it appeared that prices to the consumer might advance. This opinion seemed to be current with the buying public. The advertising copy of the company was to be designed to take advantage of this presumed inclination of the consumer to purchase in the spring of 1923 in order to avoid higher prices later in the year. The argument that prices might advance could be used to encourage the retailers to carry stoves in stock to meet the summer demand.

It was decided to spend 25% of the total advertising appropriation for 1923 during the early spring of that year. The advertising was placed in the three or four large metropolitan daily papers in which the company customarily advertised. The company endeavored to interest the retailers in the campaign by sending them circulars describing the advertising that was to be undertaken. In 1922, 30% of the total sales for the year had been made in the first six months of the year. In the spring of 1923, sales equal to 40% of the preceding year's entire volume were made. The factory was not compelled to close a single day in the first half of 1923, whereas during the same period of the preceding year, for two months only part-time operation had been possible. By smoothing out the production schedule, the

price of stoves was not advanced, although molders' wages were increased from \$6.50 to \$7.50 per day and the piece-rates of all other workers were increased 20%.

28. HAGEN & DEWAR—ADVERTISING BY A WOOL MERCHANT¹

Hagen & Dewar, a firm of Boston wool merchants of old standing, each year sends its wool buyers to the territory region to purchase wool from growers. The common practice of these buyers is to examine wool offered for sale as it is brought by the growers to the large assembling points in Montana, Utah, New Mexico, and Texas, and to purchase from the growers for cash. Occasionally, however, a consignment year occurs in the wool trade, generally during a period of prosperity in sheep raising when the sheep owners are financially able to carry their wool and when conditions point toward a rise in prices. When such a period occurs, eastern wool merchants seek to obtain as large consignments of wool as possible.

Hagen & Dewar were confronted in January of a recent year with the prospect that it would be a consignment year, and the question arose as to how the firm was to advertise its services to growers in order to secure large consignments. Buyers had not gone early into the western territory because "buying on the back" was not possible that year; the growers did not need financial assistance and were waiting confidently for a rise in prices at shearing time. Several methods of advertising suggested themselves to the firm. Although its buyers were well known to the growers in the wool territory, the opinion was prevalent in the trade that buyers were known chiefly as individuals rather than as representatives of specific firms. A buyer was highly skilled in judging the grade and shrinkage of a lot of wool and in recognizing to which mill it was best suited. Hence each buyer tended to establish an individual reputation. It was essential, however, in a consignment year that the firm's name be well known. Farm papers, which circulated widely in the sheep-raising districts, were energetically soliciting advertisements from wool merchants. A series of advertisements in one of these papers for one district alone for the ensuing six months would have cost from \$400 to \$500. Another method was to send calendars bearing

¹Copeland, p. 538.

the firm's name to all growers, small and large, and to the banks in the wool-growing districts; calendars had been distributed by the firm on a modest scale for several years and apparently had been well received. Still another suggestion was to send out the buyers early to visit the growers for the purpose of promoting consignments to the firm at shearing time. The buyers themselves, when consulted, were ready to leave early to solicit consignments, but the firm was skeptical as to whether a typical buyer would be successful in stimulating consignments. The firm decided that it could not afford to issue calendars, to advertise in growers' journals and local papers, and to send out its buyers early, all in one season; the expense entailed would have been too great.

One partner, who stated that in previous consignment years he never had been able to learn that any grower had consigned wool to the firm as a result of reading its advertisements in local newspapers or farm journals, finally persuaded the firm to embark on a new venture. His plan was to send one of the partners to visit personally the bankers in the chief wool-growing districts and to inspire their confidence so that when growers went to the bankers for advice on consignments his firm would be the bankers' choice. He believed that the local bankers were the real advisers of the growers and that in a consignment year the buyers were likely to be shunned by the growers.

The plan was adopted. The buyers were sent out at the regular season for purchasing wool and were not deflected from their regular routes. A partner was sent through the entire wool territory, spending as much time as he deemed necessary in the large growing districts in order to make himself acquainted with the bankers and to carry out a general missionary program for the firm.

The results of this plan were almost as difficult to measure as the results of advertising, because the year in which it was attempted turned out not to be a year of heavy consignment. The buyers purchased large quantities of wool outright from the growers. Nevertheless, it was the conclusion of the firm that this partner's meeting with the bankers had been worth while and that in another consignment year it would be of help to the firm.

At about the same date that the firm went through this experience, it began to question the practicability of advertising

in newspapers in New England. Several daily newspapers in New England devoted special pages to the wool trade and wool-manufacturing industries in one issue each week. In these special pages they summarized the conditions in the wool trade and the wool-manufacturing industries for the week, giving all the advance information which they could acquire. These papers solicited advertising from Hagen & Dewar to be inserted on their regular wool pages. The partner who made the missionary tour for the firm through the West advocated that it cease advertising in these newspapers, because, he said, the woolen and worsted manufacturers and the wool merchants supplied all the information for those trade reports and consequently the firm's customers knew what was in the reports before they were written. Hence he concluded that although many prominent wool firms continued to place advertising cards regularly in these newspapers, no advantage could be gained by his firm from such advertising. He approved the continuance of advertisements in several trade journals which were technical in character. The firm took his advice and ceased advertising in the newspapers.

D. THE EXTENSION OF SALES OPERATIONS

29. STAR COPPER MINING COMPANY—ACQUISITION OF A FABRICATING PLANT¹

When the purchase of the American Brass Company by the Anaconda Copper Mining Company² was consummated in February, 1922, the Star Copper Mining Company was faced with the question of whether it should seek to effect a similar merger.

Before the war the Star Copper Mining Company was reported to have disposed of approximately 80% of its production in Central Europe, particularly in Germany. In 1919, about 10% of its production was exported; in 1920 the amount exported had risen to over 20,000,000 pounds, and during the first five months of 1922 exports were at the rate of 35,000,000 pounds yearly.

¹Copeland, p. 266.

²The Anaconda Copper Mining Company was the largest producer of copper in the United States, but its mines, located in Montana, were operated at a higher cost per pound of fine copper than were the mines of the majority of large producers. Its high cost was attributed partly to the form in which the metal

The Star mines ceased operation in August, 1921, and were still closed in April, 1922. Stocks of the company had been reduced from 90,000,000 pounds to 40,000,000 pounds. The financial condition of the company was such as to permit re-

occurred, involving costly smelting processes, and partly to labor conditions, which necessitated the payment of high wages. The production of the Anaconda Copper Mining Company, compared with that of the Star Copper Mining Company and with the total production of the United States for the preceding 10 years, was as follows (in pounds):

Year	Anaconda Copper Mining Company	Star Copper Mining Co. and Controlled Co's.	Fine Copper Produced in United States
1912	294,474,161	138,000,000	992,498,836
1913	241,983,323	95,000,000	938,424,488
1914	205,208,531	113,000,000	912,166,544
1915	235,076,289	154,000,000	1,152,039,488
1916	307,395,092	167,000,000	1,625,074,785
1917	239,014,880	156,000,000	1,543,455,612
1918	272,923,031	142,000,000	1,570,685,019
1919	129,781,031	108,000,000	1,026,243,459
1920	138,763,065	98,000,000	1,077,721,125
1921	32,337,736	35,000,000	410,085,119

In 1918 the Anaconda Copper Mining Company constructed a wire mill in Montana, which operated almost at capacity throughout the depression of 1921. In 1922, the company began the manufacture of copper shingles at one of its plants in New Jersey, and an extensive program of advertising to consumers was inaugurated; this promised to be an increasing outlet for copper. In normal times, about one-fourth the Anaconda production was exported.

The American Brass Company, the largest single consumer of copper, manufactured sheets, bars, wire rods and other shapes for the use of secondary fabricators. The output of a subsidiary consisted of completed small articles for hardware and other trades. Its production of brass and the copper equivalent (based on two-thirds copper content of brass) from 1911 to 1920 were as follows: (*Commercial and Financial Chronicle*, vol. 114, p. 309.)

Year	Pounds Brass	Copper Equivalent
1911	233,839,101	155,892,734
1912	312,461,536	208,307,600
1913	297,253,789	198,169,193
1914	233,061,384	155,074,256
1915	387,959,514	258,639,676
1916	497,324,042	331,549,362
1917	500,700,548	333,860,366
1918	564,853,928	376,569,286
1919	369,591,018	240,394,012
1920	405,178,719	270,119,146

The Star Copper Mining Company produced lake copper as contrasted with Anaconda electrolytic copper. Inasmuch as lake copper was mined in a pure state, it could be separated from waste material usually by physical processes and did not require electrolytic refining in order to remove impurities. Although in a few industries one kind of copper was preferred, lake copper and electrolytic copper generally were interchangeable. The price of lake copper usually was one-eighth to one-fourth of a cent per pound higher than electrolytic. The producing cost of the Star Copper Mining Company was high, but slightly below the cost of Anaconda.

sonable expenditure for the acquisition of a fabricating plant.

In his letter to the Anaconda stockholders in December, 1921, Mr. Ryan, chairman of the board of directors, emphasized the importance of protecting investment and the need for improvement in marketing and distributing methods as follows:

For several years it has been increasingly apparent that in order to place the business on a sound foundation, it would be necessary to acquire manufacturing and fabricating plants through which the product of the corporation in refined copper and zinc might find an outlet to the various industries which utilize such products.

It has been a growing conviction of the officers that the large investment required to carry on the business of mining, smelting and refining of copper and zinc was inadequately protected, and the business lacked a stabilizing influence so long as the producers could not reach out to the ultimate consumers of their product and take steps which it is believed necessarily must be taken if the copper producers are to meet the competitive efforts of the producers of other metals in marketing and distributing the same.

A study of the brass industry developed that there are engaged in the United States in lines of manufacturing and fabricating copper product from raw materials about 32 concerns of sufficient importance to be taken into consideration, and that the total capacity of the plants owned by the above companies exceeds annually an output of 1,880,000,000 pounds of copper. As this capacity is considered more than twice as much as has ever been required by the United States in pre-war years and probably 80% more than has been required during the comparatively busy years in the United States of 1919-1920, and as it was found that a good many of the plants are well situated for distributing, modern in construction, and could meet business requirements as well as plants which could be constructed, it became apparent that further building of plants would merely add to an already over-constructed mill capacity and that an effort in this direction would result in adding demoralization rather than stabilization to the situation.

Normally one-third to one-half the copper production of the United States was exported. Although exports were sustained through 1921 and the early months of 1922, the financial conditions in European countries, especially Germany, indicated that a reduction of their imports might be necessary in spite of their need for copper. About one-half the quantities exported from the United States were offset by imported ores which came chiefly from South America for smelting and refining.

In the copper mining industry, a large portion of the output had been produced by a few large companies controlling several

properties.¹ In each period of business activity and high copper prices, numerous small independent mines commenced operations, usually under conditions incurring high operating costs. Because several months were required from the time operations began before finished copper was ready for the market, the end of a period of business activity invariably found copper stocks at a maximum. The period of activity during the Great War and the large stocks of reclaimed copper accumulated from military operations in Europe had aggravated the conditions in the industry.

Since copper inventories represented large amounts of capital, heavy losses were likely to be incurred when inventories were liquidated at low prices during a depression. Additional losses were incurred when operations at the mines were suspended, as in 1921; the Anaconda Copper Mining Company incurred maintenance and carrying charges of approximately \$6,000,000 during that year. Not only did the equipment of a mining company deteriorate rapidly during the shut-down, and the mine shafts and passages become obstructed by caving of the walls, but the labor force became scattered. Inasmuch as copper mining was conducted chiefly in isolated regions, once the miners had been forced to seek work in other places, it was difficult to attract them back to the mines.² It was important, therefore, that a mining organization should be maintained intact, even during periods of industrial inactivity. Although it was undesirable to make extensive inroads upon unmined ore reserves during periods of low price, frequently a mine could well afford to dispose of a restricted output during a period of depression at less than cost, if necessary, in order to avoid the serious results of a shut-down. It was doubtless in order to assure itself an outlet for at least a minimum quantity of product during periods of depression that the Anaconda management conceived the idea of controlling a copper consuming company.

In 1921, approximately one-third the domestic production of copper was used in the electrical industry. The remainder of

¹On methods of marketing copper, see F. Ernest Richter, "The Organization of the Copper Market," *Harvard Business Review*, Vol. I, pp. 196-211.

²Much of the work in copper mining which was disagreeable and difficult had been done by newly arrived immigrants. Restrictive immigration legislation in 1921 promised to intensify the labor difficulties.

the domestic production which was not exported was fabricated into small articles for use in various industries.¹

Copper and its principal alloy, brass, maintained their position in the various industries prior to the Great War because of their beauty, durability, and resistance to corrosion, as well as by reason of special characteristics, such as conductivity. During the war the output of copper and brass was required largely for military purposes, with the result that civilian requirements were supplied by substitute metals. In some cases, the substitutes were inferior to copper and brass; in others, they were equally effective and less expensive.

When the post-war boom of 1919-1920 receded and the demand declined for articles made of copper and brass, as well as for their substitutes, the former metals were at a disadvantage. Although not immune from competition in the electrical field, copper maintained its position in that industry because of its superior conductivity. In other directions, the remedy for the copper producers seemed to lie in the development of markets, by means of aggressive selling and advertising methods, for small articles made of copper and brass and for the replacement of other metals in buildings, automobiles, and steamships.

ESTIMATED CONSUMPTION OF COPPER IN THE UNITED STATES
(Pounds of Copper)

	1919	1920	1921
Electrical manufactures	284,000,000	340,000,000	260,000,000
Telephones and telegraphs	65,679,218	100,000,000	90,000,000
Wire and rods, not included elsewhere	160,000,000	190,000,000	110,000,000
Steam railways, electrified	250,000	2,200,000	None
Automobiles	92,965,000	99,320,400	54,200,000
Locomotives	8,998,000	9,457,250	4,697,000
Railway cars	24,830,800	17,576,750	9,893,000
Ships, commercial	101,884,625	61,906,325	32,000,000
Ships, naval	8,700,000	5,000,000	4,500,000
Buildings	76,778,800	53,443,200	50,000,000
Bearings and bushings	80,000,000	80,000,000	25,000,000
Ammunition	23,000,000	23,400,000	16,500,000
Valves	20,000,000	20,000,000	7,500,000
Condensers	10,000,000	6,000,000	4,000,000
Lubricators, etc.	6,300,000	6,000,000	2,000,000
Coins	2,075,321	3,148,863	2,930,000
Fire extinguishers	2,000,000	2,100,000	1,800,000
Pins	2,000,000	2,000,000	2,000,000
Cash registers	1,300,000	1,340,000	400,000
Other uses, and unaccounted	81,002,000	114,542,750	55,303,000
Manufactures for export	157,965,641	164,420,412	50,390,000
Total	1,209,729,405	1,301,855,950	783,113,000

American Bureau of Metal Statistics, Year Book 1921.

Because of the apparent overexpansion of the brass-fabricating industry, the Star Copper Mining Company did not consider it advisable to erect new plants. In judging the desirability of various fabricating plants which might be purchased, the following factors were taken into consideration: the copper-consuming capacity of each plant in relation to the production of the Star mines; whether the product manufactured was for further fabrication or for retail distribution; the probable steadiness of demand for the product; the diversity of the line; the location of the plant; the price; the personnel of the organization and the experience of the workers; the past history of the plant; the transportation facilities; and the potential market in the immediate vicinity of the plant.

A plant equipped to manufacture small parts for automobiles was available at Cleveland, Ohio, at a cost of \$500,000, which was less than the actual value of the buildings and equipment. The company, which had been established in 1916, had prospered during the period of activity of 1917-1920, but had been forced to shut down early in 1922 because of inability to meet the low prices at which eastern fabricators were selling their goods. So far as could be ascertained by investigation, the difficulty had been inexperience on the part of the management and inefficiency on the part of the employees. This plant would have had the advantages of low initial cost, cheap transportation by water from the Star mines, and proximity to a large copper-and-brass-consuming district. The consumption of the Cleveland plant would have been less than one-half the Star mines' potential production. The apparent disadvantages were the lack of organization and of experienced brass workers. The company had not been operating long enough to have established a permanent clientele. The purchase price would have had to be paid in cash.

The second available plant, which was located in Connecticut, manufactured sheets, bars, tubes, and other shapes for use by secondary fabricators. The company was over 30 years old and had operated successfully up to 1918, when the capacity of the plant had been more than doubled in order to fill war contracts. Although the company was still sound financially, difficulty had been experienced, in common with other fabricating companies, in obtaining a sufficient volume of sales to employ the entire facilities during 1921-1922. The president and other

officers of this company were desirous of being relieved of responsibility and preferred to sell outright rather than to break in new men to take their places. The plant was available at a price of \$1,600,000, which was a reasonable valuation for the physical equipment plus 33½% for "going value." The old management was willing to remain for two years, if desired, under the direction of the purchasing company.

The advantages of this plant seemed to be a reasonable purchase price, an established reputation and clientele, and a location where skilled brass workers were available. The transportation costs from Michigan were high, however, and if the severe competition in eastern markets was to be avoided, the finished product would have had to be shipped for the most part to the Middle West. In the opinion of the Star management, reorganization would have been necessary, if this plant were purchased, in order to replace the old officers, who had conducted affairs on a personal basis. The Connecticut plant, when operating at capacity, would have required one and one-half times the normal production of the Star mines. The purchase price could have been paid 50% in cash and 50% in notes due at quarterly intervals over a period of three years.

The third fabricating plant under consideration was located in New York, not far from Buffalo. The company had been operating seven years and had been successful. Expansion had been conservative but constant, under excellent management. The desire of the corporation to sell its holdings was for purely financial reasons, and it was thought that the Star Copper Mining Company could safely entrust the operation of the business to the efficient organization which had developed it. Although hard hit by the depression, this plant had maintained more than sufficient production to carry its overhead charges. Raw materials could have been transported by water as far as Buffalo, and motor trucks could have been employed for the short haul to the plant. The physical value of the plant was placed at approximately \$2,000,000, after allowing for depreciation sufficient to adjust to replacement costs in 1922. Good-will and "going value" were estimated at \$1,000,000. A 6% bond issue of \$750,000 maturing in 1938 was outstanding. The plant had a casting shop and rolling mill which produced sheets and a small fabricating plant which manufactured automobile and

other parts stamped from sheets. The normal copper consumption of this plant was slightly greater than the Star Copper Mining Company's output in a normal year. Skilled brass workers were not available in this immediate vicinity, but the management had found little difficulty in obtaining labor from Connecticut. If this plant were purchased, the bond issue was to be assumed by the Star Copper Mining Company and the purchase price paid 75% in cash and the remainder at the end of one year.

30. WYANT TEXTILE COMPANY—THE DEVELOPMENT OF A VERTICAL ORGANIZATION BY A WOOLEN MANUFACTURING COMPANY

In 1919, a mill was erected in a middle-western city for the manufacture of woolen cloth. The enterprise had the endorsement of an investment banker and an industrial investigator. There was no other textile company in the locality, and at first the president of the Wyant Textile Company doubted its ability to recruit skilled labor. He assumed, however, that there were enough textile operators who had discontinued their occupation, who could be re-employed. The population of the locality was estimated at 2% of that for the United States. It was reasoned that 2% of the textile workers who had discontinued that occupation had moved to this locality and entered other industries. The company advertised, therefore, in the local newspapers and in a short time had engaged 175 skilled operators to work in the new factory. The mill was to manufacture medium- and low-grade cloth. It was the intention of the president to distribute the output through selling agents who in turn sold to manufacturers of garments.

After manufacturing operations started in 1920, the business depression, which began at that time, made it impossible for the company to market the cloth through agents at a profitable figure. It was considered advisable to keep the manufacturing organization intact and to produce for stock in anticipation of business recovery. The type of cloth was changed from fancy to staple in order to minimize losses on inventory, but inventories accumulated until it was necessary to liquidate them. An agreement was made, accordingly, with a clothing contractor whereby he was to manufacture the cloth into suits and overcoats at a fixed

unit fee. The Wyant Textile Company was to finance the contractor's pay-roll, the finished products were to be sold on joint account, and the profits divided. Thus all the inventories were liquidated at a slight profit.

In January, 1921, when the arrangement was discontinued, the management of the Wyant Textile Company considered the advisability of expanding the plant and assuming new functions of manufacturing the cloth into clothing and selling directly to retailers. This plan was advantageous for the company because cutting economies could be realized by increasing the width of the cloth eight inches, a process which required only a simple adjustment of the machines. Furthermore, the new plan eliminated selling commissions.

If cloth were manufactured for distribution through selling agents to manufacturers, it was necessary to perform additional manufacturing operations in order to comply with individual requests. These operations added from 15 to 30 cents per yard to manufacturing costs, and did not increase the durability of the cloth. One of the common requests received by woolen manufacturers was to accentuate stripes in the cloth by the use of heavier silk thread. Distribution of cloth through selling agents meant rigid inspection from customers. It was difficult for cloth to pass these inspections, since requirements and ideas of quality varied. If selling agents were employed, it was necessary to manufacture samples in advance of selling seasons. This was not only expensive but slow, because mill space was taken up in the manufacture of these samples. A variety of fabrics had to be produced in order to satisfy the demands of manufacturers and to facilitate the sales of agents. However, the number of designs manufactured could be reduced, and buying economies could be realized by producing a uniform quality and a restricted number of styles. These economies could be effected if the company manufactured its output into suits and overcoats.

If the company sold directly to retailers, it was necessary to create a national selling organization, since the local market was too small to absorb the output of the company. The new plan required the purchase of additional equipment, the expansion of the plant, and the employment of more workmen. Little difficulty was expected, however, in employing garment workers, since there were other garment manufacturing companies in the dis-

trict. It also was necessary for the company to assume credit responsibility for its customers. If the company sold cloth through a selling agent, there was no guarantee of credits or sales by the distributor. It was easier to control the credits of 75 or 100 local manufacturers than the credits of retailers throughout the United States. Another disadvantage which the president foresaw was the slower rate of capital turnover. Instead of shipping cloth and receiving payment within 60 days, the cloth was turned over to the garment factory to manufacture, and payment could not be received for 135 days.

The Wyant Textile Company decided to begin the manufacture of suits and overcoats in January, 1921. Eight salesmen were employed to distribute the product. The company made no effort to compete directly with established and well-advertised lines. Wyant garments were trade-marked but not advertised. The selling appeal was based on standard quality for a low price made possible by manufacturing and selling economies. The company obtained national distribution and solicited orders from retailers in cities of 10,000 or more. An exclusive agency plan was not considered feasible.

After the adoption of the plan an additional advantage was discovered. The operations of the mill proceeded regularly, which was an additional economy. There was no cessation in production caused by waiting for orders which came through the selling agents.

31. TRIM WRAPPING COMPANY—REFUSAL TO UNDERTAKE DEVELOPMENT OF A NEW MACHINE ON A COMMERCIAL BASIS

The Trim Wrapping Company manufactured machines to wrap gum, candy, soap, and small boxes of all kinds. When a manufacturer expressed a desire for a machine which had not been designed, the Trim Wrapping Company was accustomed to undertake the development at its own risk, if the potential demand for the product warranted it. In 1922, the Try-A-Lite Match Company made the proposal that the Trim Wrapping Company undertake, on a commission basis, the development of a machine for the purpose of wrapping together six 5-cent match boxes. The Try-A-Lite Match Company offered to pay the expenses and to allow a profit of about 15% for the Trim Wrap-

ping Company. Thereafter, the match company expected to be able to purchase additional machines of the same type at manufacturing cost plus about 15%.

The Trim Wrapping Company was a consolidation of six companies which, before 1912, had manufactured various types of wrapping machines. Each company had possessed numerous patents, and had incurred continually the expense of prosecuting the others for infringements. The consolidation was formed, accordingly, in order to permit the patents to be pooled and to facilitate manufacturing economies. Since the time of consolidation only two small competing companies had been formed, so that the Trim Wrapping Company had a virtual monopoly.

The products of the consolidated company were highly specialized. A machine designed to wrap a package of a particular size could not be altered readily to wrap one of slightly different dimensions. Occasionally it was possible to make extensive changes, but the cost usually amounted to at least half that of a new machine. The company relied partially on its patents for protection, but these were expiring continually. Orders usually were received because of the reputation and experience of the company. Its policy was to manufacture extremely solid machines, which seldom wore out in less than from 10 to 20 years. They were designed so that as many standard parts as possible could be used in their construction. These were purchased from other manufacturers. Castings were ordered at a neighboring foundry, and unusual parts were made in the factory of the company. Labor amounted to over 75% of the direct cost of a machine. The plant was operated entirely on a special order basis. Only one machine had been standardized so that it could be produced for stock in periods of inactivity. This one wrapped candy kisses and was sold to all types of candy merchants from confectioners to owners of sidewalk booths at amusement parks. Because the company was able to make from 50 to 100 of these machines simultaneously, the manufacturing cost had been reduced greatly. It was desirable, therefore, to produce machines of the same type in quantities. To operate the machine shop at capacity, orders for the manufacture of various simple articles were accepted from other manufacturers in the vicinity; the output under such contracts often equaled 10% of the total.

When a new machine was developed it usually was impossible

to charge the entire cost of the first machine to the purchaser, but the profit on subsequent machines was counted on to absorb the loss on the first. Only one machine was built, and the selling price¹ was fixed at such a point that additional orders could be obtained on the same basis. Each machine was guaranteed to give satisfactory service, otherwise the company took it back and refunded the purchase price.

The company had learned by experience that there were three motives for the purchase of a wrapping machine: namely, economy, appearance, and protection. Of these, the first was decidedly the strongest, although a few manufacturers made products the appearance or the protection of which was impaired by hand wrapping. In general, manufacturers hesitated to purchase expensive wrapping machinery because it soon might become obsolete. Since the machines of the Trim Wrapping Company were so specialized, they could not be adapted readily to a different-sized package or style wrapping. If the output of the plant had to be decreased, the expense of the machines could not be curtailed, whereas hand labor could be discharged. Consequently, purchasers were reluctant to buy machines unless the saving effected thereby was sufficient to return the purchase price in one or two years. In order to maintain its price within this limit, the Trim Wrapping Company ordinarily required a total output of no less than 10 of any one machine, so that allowance for all expenses could be made, including those involved in the development of the new machine. Sometimes several attempts were made before a satisfactory design was devised. The selling price of the machines varied from \$1,500 to \$5,000. Total sales of the company averaged about \$1,000,000 per year. Since the

¹The Trim Wrapping Company never had pursued a policy of renting machines as had the United Shoe Machinery Company. Although each machine was covered by a number of patents, in many cases they did not afford adequate protection. The users of wrapping machines, furthermore, desired a sense of ownership in the equipment in their factories and purchased more extensively than the shoe manufacturers, who rented equipment from the United Shoe Machinery Company. Since the wrapping machines were unusually specialized, the Trim Wrapping Company could never be sure how long a user would continue to need a specified item of equipment. It was apprehended that rental would lead to disputes regarding efficiency of machines, which could be avoided by actual sale. In order to make sales to companies which could not pay for machines immediately, the Trim Wrapping Company, in many instances, had agreed to permit payment to be made by notes, maturing over a period of 13 months from date of shipment. As security for these notes, the company retained a mortgage on the machine until payment was completed.

net worth amounted to \$2,000,000, the net profit had to be unusually large in order to yield a fair return to the stockholders.

A uniform price was established for a machine and was quoted to all purchasers. When the sales were inadequate to dispose of the entire output of the Trim Wrapping Company, it sometimes made offers of 10% to 15% discounts to users of machines on the condition that additional orders be placed immediately. Sufficient sales ordinarily were made through such offers to maintain activity. When concessions were granted, however, it was almost impossible to re-establish the original price, and it was necessary to quote the reduced price to other customers.

In 1922, the plant was operating at approximately 80% capacity; about 200 men, 90% of whom were skilled designers or mechanics, were employed. It did not seem advisable to the Trim Wrapping Company to accept the suggestion made by the Try-A-Lite Match Company that an exception be made to the sales policy. By the adoption of such a procedure the former assumed the rôle of a contractor and was not in a position to derive the greatest profit from the patents which it held, nor from the reputation for service and reliability which it had established. The company was protected against losses by the terms of the offer, but it was not able to secure substantial profits. Consequently, the executives decided not to deviate from the regular practice.

The Try-A-Lite Match Company then suggested that, although six machines probably were adequate to meet its requirements, the Warren Match Company, which produced a similar 5-cent package, might be induced to buy as many as 20 machines after the development was made. The estimated saving to be effected by the match-wrapping machine as computed by the Trim Wrapping Company was about \$3,000 per year. On this basis, it could be sold for at least \$4,000. The cost of the development was estimated at \$5,500 and that of the manufacture of five additional machines, at \$2,500 each. Thus, after allowing reserves for unsuccessful development and unsatisfactory machines, an order for six machines of the same type probably would net the company as much profit as could be secured if the same portion of the factory were used for another development. Since there was also a possibility of making a sale to the Warren Match Company, the Trim Wrapping Company con-

sented to undertake the development of the new machine for \$4,000. It was guaranteed to be satisfactory and the Try-A-Lite Match Company agreed to order at least five more at the same price, if the first proved suitable. After the development was completed the company intended to make every effort to secure the Warren Match Company as a customer.

32. BELMAR ELECTRICAL SUPPLY COMPANY—SALE OF AUTOMOBILE ACCESSORIES BY AN ELECTRICAL SUPPLY WHOLESALER

In 1918, the Belmar Electrical Supply Company, situated in New England, decided to add storage batteries and rectifiers¹ to the merchandise it sold. The exclusive agency for New England was secured from a manufacturing company which produced batteries and rectifiers of high quality. The demand for these products had increased from electrical contractors, electrical supply retailers, and garages. The Belmar Electrical Supply Company had been distributing a complete line of standard electrical supplies until 1918 through these outlets.

In order to maintain a high reputation among its customers, it became apparent in 1919, that a service station was necessary for the repair of batteries and rectifiers. These products were not highly perfected and required skilful repair supervision. There existed few battery service stations at that time. A service station was established, consequently, in the automobile district of the city in which the company was located. It was necessary to employ men who had had long experience in the storage battery business. It soon was discovered that batteries and rectifiers could be sold more easily from this service station, which was in close contact with the automobile trade, than from the main office of the wholesaler. Specialty salesmen were employed who had a thorough knowledge of storage batteries and rectifiers. The inventory of these products was kept at the service station and the station became a complete unit distinct from the other activities of the Belmar Electrical Supply Company.

In 1920, the company was offered three exclusive agencies for New England: a well-known make of tires, automobile

¹Rectifiers were used for transforming alternating to direct current for charging batteries.

chains, and brake linings. Several officers of the company held the opinion that since the operation of the service station was necessary, it could be utilized more completely by selling other products to customers who purchased storage batteries and rectifiers. The same specialty salesmen employed by the service station could be used for this purpose.

The president of the company, however, was opposed to the policy of selling products of a different type from those ordinarily distributed by an electrical supply wholesaler which could not be sold by the same salesmen to the firm's customers. The president believed that a wholesaler should adopt a policy which resulted in the greatest economy to consumers. He maintained that an electrical supply wholesaler was not able to distribute automobile supply accessories as cheaply as one who specialized in those products. Although these tires, chains, and brake linings could be sold by the salesmen already employed in the service station to sell batteries and rectifiers, the addition of these accessories was another step which tended further away from the established business of the electrical supply wholesaler. The president held the opinion that the sale of automobile accessories was not likely to aid in selling electrical supplies. Since one sales force was employed to sell the standard products and another to sell the batteries, rectifiers, and accessories, it was improbable that the retailer would associate these two departments of the Belmar Electrical Supply Company. Other electrical supply wholesalers had adopted the policy of selling automobile accessories but the president deemed that this plan was not going to be successful over a long period of time. A profit might be indicated in a time of prosperity, but when a depression came, electrical supply wholesalers might have difficulty in competing with automobile accessory wholesalers who were more familiar with this trade.

In spite of these objections, however, the possibility of reducing the overhead costs of the battery service station by the addition of this new merchandise, led the executives of the company to decide to act as exclusive agents for these chains, tires, and brake linings. Although these products were of a different type from those that always had been sold by the company, they were similar enough to the battery and rectifier business that had been established, to warrant their sale. No

definite quantity of purchases were required of the exclusive agent by the manufacturers, and the Belmar Electrical Supply Company had to make no commitments. The company decided to limit itself to these three articles and not to sell a further assortment of automobile supplies.

In the summer of 1923, the company was of the opinion that although the policy had not resulted in substantial profits, the percentage of overhead of the service station had been reduced. The sale of standard installation products of the automobile trade had been increased slightly by this policy. The president stated that the successful trial of this plan justified its permanent adoption.

33. SILLOTH WHOLESALE DRUG COMPANY—ADDITION OF JEWELRY TO OTHER MERCHANDISE SOLD BY A WHOLESALE DRUGGIST

The Silloth Wholesale Drug Company is considered a leading drug wholesaler with national distribution. It had been one of the first to develop new types of merchandise to be sold to the drug trade. An increasing tendency had been developing for drug stores to sell types of "convenience" articles other than standard drug articles. This addition of merchandise had in some cases gone so far as to include "specialty" articles. The Silloth Wholesale Drug Company, for instance, had, in 1920, added phonographs and records to the merchandise it sold.

In the summer of 1923 this company considered the inclusion of Italian bead jewelry in its merchandise. If the new product were placed in stock, it was planned to introduce it to the trade at an annual drug exposition held in September. Italian bead jewelry, such as necklaces, earrings, bracelets, and beaded bags, had become popular with the public during the previous year. A retail drug store was maintained in a neighboring city by the Silloth Wholesale Drug Company for the purpose of measuring directly the attitude of the public towards Silloth products. The company had tried the sale of this jewelry in its retail store. The trial was successful as indicated by the volume of jewelry sold and by the number of customers attracted to the store.

The introduction of new types of merchandise was caused by two factors: first, the increase of competition among drug retailers had resulted in a lower margin of profit on standard

articles; second, drug stores could sell miscellaneous products to their regular clientele at lower prices than stores which specialized in these products. For instance, the Sillot Wholesale Drug Company could sell to drug retailers an imported Italian bead necklace to retail at about \$12. Such a necklace was sold in stores which specialized on this type of jewelry for about twice that amount. It was contended that the sale of additional miscellaneous articles reduced the overhead on each product, with the result that such articles could be sold at a lower price than in specialty stores. The margin of profit allowed by manufacturers of such merchandise was larger than the margin of profit allowed by manufacturers of standard drug supplies. For this reason drug wholesalers were trying constantly, both for their own benefit and for the retailer's benefit, to find new products which could be sold in drug stores. In addition to the profit offered on this jewelry, which was higher than that on drugs, the merchandise might serve as a novelty article or "leader" to draw people into the store who then might purchase other merchandise. Then, too, customers who entered the drug store to purchase a familiar product might be attracted by the jewelry display and make purchases of the latter. Another feature that lead the company to favor adding jewelry to its merchandise was its desire to be considered by the retail trade as a leader among wholesalers. Several times the company had been the first to attempt a new type of product which later became a standard article in the drug trade. The company desired to maintain this reputation and to increase its prestige. No other drug wholesaler was selling jewelry at this time.

On the other hand, there were objections inherent in this plan. A considerable investment in inventory was necessary. A special department had to be organized to handle the jewelry. It was necessary to purchase the jewelry from Italy, and difficulties always were likely to arise in purchasing from such a distant market. The directors of the company were of the opinion that this type of jewelry was not a temporary style or fad and that the demand for it was permanent. There was the possibility, however, that this opinion might be mistaken. The experience of the company in selling new products usually had been successful. The company had experienced difficulty in a depression in selling luxury articles, such as phonographs, which had been introduced

in a time of prosperity. When phonographs were sold in 1920, the demand of the public for them could not be met by the existing channels of distribution, hence, any store which could purchase a supply could sell them successfully. When the business depression came in 1921 the demand for phonographs fell off to such an extent that the Silloth Wholesale Drug Company was unable to sell them. The company did not organize a special department or employ special salesmen to sell phonographs. The experience with phonographs made the directors cautious in the purchase of new types of merchandise.

It was also necessary for the retailers to make additional investment in the jewelry, and it was necessary for them in turn to establish a special department. There always had been the obstacle of convincing retailers of the wisdom of selling new types of products, and should the company be unable to persuade the retail trade, inventory losses and a loss in prestige might be sustained. It was necessary for the company to purchase the jewelry outright and to carry it in stock before sales could be solicited.

In spite of these objections, however, the experience of selling jewelry in the company's experimental drug store was so successful that the directors decided to add jewelry to the products already carried.

34. DORSEY WHOLESALE DRUG COMPANY—ADDITION OF SPECIALTY PRODUCT TO MERCHANDISE SOLD BY A WHOLESALE DRUGGIST

In August, 1920, the Dorsey Wholesale Drug Company, situated in Chicago, was offered the exclusive agency for six states by the Hector Phonograph Company. This company for several years had been manufacturing only phonograph cabinets. In the spring of 1920, the demand for phonographs was greater than existing manufacturers could meet and the Hector Phonograph Company decided that the time was propitious to manufacture a complete instrument. The company had not carried on any national advertising and was not well established in the trade. The company did not manufacture phonograph records. The Hector Phonograph was to sell at retail for prices varying from \$75 to \$265.

There had been a tendency for several years for both whole-

sale and retail druggists to sell more varied types of merchandise. The increased competition among both wholesalers and retailers had become so keen that the margin of profit on standard drug supplies had been reduced. The tendency had been, therefore, for wholesalers to introduce products to retailers on which there was a more substantial profit for both.

The executives of the Dorsey Wholesale Drug Company were of the opinion that phonographs were a suitable product to be sold by drug stores and that there existed on them a more satisfactory profit for the retailer than on standard supplies. Phonograph records had been sold in drug stores for several years. The officers of the Dorsey Wholesale Drug Company judged that since the sale of phonograph records had been successful, phonographs also might be distributed through drug retailers. A few of the officers suggested that the phonograph was not a "convenience article" and, therefore, not suitable for distribution through drug stores. Other officers maintained that the demand for phonographs had become so great that they could be sold by any one who could obtain a supply. Manufacturers of established brands had accepted orders for phonograph deliveries six or eight months in advance; hence distributors could not secure immediate deliveries to meet the urgent demand of their customers. To the latter group of executives, therefore, the determination of whether a phonograph was a "specialty" or "convenience article" was not important, since the supply did not meet the public demand. An example was given of several wholesale druggists in other parts of the United States who had followed the policy of selling phonographs with unusual success. If phonographs were added to the other merchandise of the Dorsey Wholesale Drug Company, it was necessary to enlarge the line of credit extended to its customers because the unit of sale was high in comparison with standard drug supplies. The credit risks of the Dorsey Wholesale Drug Company were likely to increase. Furthermore the addition of phonographs made it necessary for the company to invest in a heavy inventory with the attendant risks of loss from a decline in prices.

In spite of these objections, however, the executives were of the opinion that the phonographs could be introduced successfully. It was decided, therefore, to take the exclusive agency for a four months' trial beginning September, 1920. This period

extended over those months in the year in which sales in the drug trade were greatest. This trial period enabled the company to test the plan without committing itself to a long term contract. At first the policy seemed to be highly successful. In September, 10 carloads of phonographs were sold and in October, 15 carloads were sold. In November, however, orders for only 15 machines were received. The demand for phonographs from retailers disappeared and business conditions in the drug trade as a whole became serious. The sales of September and October had led the company to place orders for a large number of phonographs in November, and it was left with heavy stocks on its hands. In January, when the trial period expired, the company did not sign a contract for a permanent agency with the Hector Phonograph Company. The business crisis in the drug trade was the principal cause for the failure to make the sale of phonographs to drug stores profitable; the company also learned by its experience that a special department and specially trained salesmen were necessary. Such a policy had been followed by western wholesale druggists and they were able to continue to distribute phonographs successfully. When business revived in the drug trade and more orders were received, the Dorsey Wholesale Drug Company was still averse to selling phonographs. The company did not deem the expense of a separate department for phonographs justified since consumers had a distinct preference for well-established brands. The exclusive agencies for these well-known brands had been given to other middle-western firms.

E. RELATIONS WITH THE GOVERNMENT

35. UNITED SHOE MACHINERY CORPORATION—LEASE SYSTEM¹

The United Shoe Machinery Corporation, manufacturing a large part of the machinery used for attaching soles to uppers in shoe factories, leased seven of its most important machines to shoe manufacturers on condition that they pay royalties ranging from less than 1 per cent per pair to 4 cents per pair. This system of leasing originated when the sewing of shoes by machine began about 1860 with the McKay sewing machine. A large sum of

¹Copeland, p. 241.

money had been spent in the development of this machine, and under the conditions then prevailing in the shoe industry, when shoes were made by hand in small establishments, no shoe manufacturer, even though he had been willing to risk his capital in a commercially untried device, was in a position to pay for the McKay machine a price calculated to reimburse its manufacturers for the expenses incurred in experimentation.

The United Shoe Machinery Corporation, which developed out of the McKay business, manufactured several types of equipment for shoe factories, including machines for the manufacture of shoes by the McKay system, turn shoes, metal-fastened shoes, and shoes made by the Goodyear Welt Process. Goodyear Welt shoes were of the best quality, and the United Shoe Machinery Corporation specialized primarily on those machines.

The company maintained an experimental department employing several hundred people solely for the improvement and development of its machines. As an example of the attention given to inventions, approximately \$1,000,000 was spent in experimental work on a pulling-over machine, which pulled the upper leather over the last, before the machine was commercially successful. The pulling-over machine had 1,182 parts in the operative head, 862 of which moved in each operation. Like many other machines manufactured by the United Shoe Machinery Corporation, the pulling-over machine required delicate adjustment.

In all, the United Shoe Machinery Corporation manufactured over 350 machines, many of them designed for the supplementary and finishing operations incidental to the attachment of soles to uppers. About 200 of those machines were sold outright, or occasionally leased at the option of the user. Those that were sold outright did not require expert attention in upkeep.

Of the seven machines that were leased on a royalty basis, the two most important were the Goodyear Welter and Stitcher. These machines always were leased together. The leases of the United Shoe Machinery Corporation were for 17 years. They required that the shoe manufacturer use the machines as nearly to capacity as possible and also that the company might inspect the machines at any time and at its own option replace any machine without expense to the shoe manufacturer. The leases further required that repair parts should be purchased from the

United Shoe Machinery Corporation. The company occasionally shifted machines from one factory where they were not being used to full capacity to another factory which needed additional equipment.

The reasons for the continuance of its leasing system were stated as follows in 1923:

The field for the use of such machinery as that manufactured by the United Shoe Machinery Corporation was limited. In the United States, for instance, somewhat over 300,000,000 pairs of shoes were manufactured annually in the plants of approximately 1,300 manufacturers. Each of the machines made by the corporation had a daily capacity of from 150 to 7,000 pairs. Thus 1,000 machines with a capacity of 1,000 pairs daily working 300 days per year would have been sufficient to meet domestic requirements. In consideration of the limited field and the high cost of developing the machines, the United Shoe Machinery Corporation could not have afforded to spend large sums in development and improvement had it not been for the existence of the leasing system. Under the leasing system, however, it was to the material interest of the company to develop new improvements.

There were from 100 to 160 operations in manufacturing a shoe. These were successive processes in which as many as 70 machines operated consecutively on the same piece of leather. An even flow of work through the factory was essential to maintain the temper of the leather. Since the operations were successive, the breaking down of any machine stopped the whole flow of work. Because of the large number of delicate parts in the principal machines and the necessity of their being adjusted to a nicety, quick and competent service was a prime essential. Only a large shoe manufacturing company would have been in a position to maintain a service department capable of keeping the machines running smoothly at all times. Under the leasing system all service and repair requirements were taken care of promptly by the United Shoe Machinery Corporation through its service departments in each of the shoe manufacturing districts.

Most of the machines that were not sold performed auxiliary and supplementary operations and were furnished without charge to shoe manufacturers using the royalty-paying machines. The auxiliary machines enabled faster and better production

and were to be used only in connection with the Goodyear Welter and Stitcher. The use of such auxiliary machines in connection with machines made by any other manufacturer was subject to a royalty so high as to be virtually prohibitive. For instance, the United Shoe Machinery Corporation developed a heel-compressing machine and a trimming machine to be used on Good-year Welt shoes in connection with its heel-attaching machine. Shoe manufacturers were enabled to secure better results and a larger output from the heel-attaching machine by the use of the auxiliary devices.

Other machines, such as metal fasteners and eyelet machines, were furnished to shoe manufacturers on condition that supplies for those machines be purchased only from the United Shoe Machinery Corporation. The prices of the supplies included the royalty. There were two reasons why the United Shoe Machinery Corporation preferred to use these terms for such machines. In the case of metal fasteners, for instance, the machines were complicated, and it was necessary that the screw wire be exactly the right size thread and of the right malleability so that the machine would operate properly. The same was true of the eyelet machines. The eyelets were fed through a raceway, and a delicate adjustment of the machine required a high degree of accuracy in the materials. In order that a large output of work might be secured from such machines, the United Shoe Machinery Corporation desired to retain control of the materials used. In the second place, the most accurate way to measure the amount of work done by such machines was the amount of material used, since the number of slugs put in the heel of a shoe, for example, varied according to the style of shoes produced by the manufacturer. Thus, the most convenient method of collecting a royalty proportionate to the amount of work actually performed by those machines was the inclusion of the royalty in the price of the supplies. There was no charge for those machines other than the royalty included in the price of the materials. Other materials made by the United Shoe Machinery Corporation were sold on the ordinary commercial basis in competition with other supply manufacturers.

The leasing system of the United Shoe Machinery Corporation was the subject of prolonged litigation under the Sherman and Clayton Acts. It was attacked by the Government as constitut-

ing undue restraint of trade and tending toward a monopoly. In the cases brought under the Sherman Act, the decision was in favor of the United Shoe Machinery Corporation. On April 17, 1922, however, the United States Supreme Court, in reviewing the decision of a lower court in a case brought against the United Shoe Machinery Corporation under the Clayton Act, handed down a decision adverse to the United Shoe Machinery Corporation. The decision prohibited the United Shoe Machinery Corporation from compelling by lease agreement the exclusive use of its machines and from enforcing an alternative royalty clause, found to be prohibitive, upon all footwear manufactured in factories where machines of competitors also were used. The decision also held invalid the agreement by which the company required manufacturers using specified machines to purchase supplies from it.

36. JOHN W. BOILEAU ET AL. VERSUS PITTSBURGH & LAKE ERIE RAILROAD COMPANY ET AL.¹—FIXING OF FREIGHT RATES
BY ADMINISTRATIVE BODY

Rate of 88 cents per net ton for the transportation of bituminous coal in carloads from the Pittsburgh, Pennsylvania, district to Ashtabula Harbor, Ohio, when for transhipment by vessel on the Great Lakes to points beyond, found to be unreasonable and rate of 78 cents prescribed for the future.

REPORT OF THE COMMISSION

MEYER, *Commissioner*

This proceeding brings in issue the freight rate of 88 cents per net ton for the transportation of bituminous coal in carloads from the Pittsburgh, Pennsylvania, district to Ashtabula Harbor, Ohio, for transhipment by vessel on the great lakes to points beyond. This, in common with coal transported between other producing points and lake ports, is known as "lake-cargo coal" and moves only during the period of open navigation.

The original complaint was filed on February 15, 1911, in complainant's own behalf and in behalf of shippers of lake coal from the Pittsburgh district. The complainant is a resident of Pittsburgh, engaged in the business of buying and selling coal

¹22. I. C. C. 640; submitted March 2, 1912; decided March 11, 1912. The map on page 529 is reproduced from *Lake Cargo Coal Rates*, 46 I. C. C. 159 (1917).

lands and property for himself and others. On May 13, 1911, a petition of intervention was filed by the Pittsburgh Coal Company, a corporation engaged in the business of mining and shipping coal from the Pittsburgh district, which adopted the original complaint as a part of its petition.

On August 19, 1911, the receivers of the Wabash Pittsburgh Terminal Railroad Company filed, on behalf of that carrier, a petition to intervene as a party defendant. Traffic originating on the line of this defendant and its subsidiary, the West Side Belt Railroad, moves to Ashtabula in connection with the Wheeling & Lake Erie Railroad. The other defendants, seven in number, are included within the New York Central and the Pennsylvania Railroad systems and form two lines of shipment between the points in question.

The Pittsburgh district embraces, generally speaking, territory within a radius of 40 miles from the Pittsburgh courthouse. Known geologically, it is the Pittsburgh bed of coal which extends into southwestern Pennsylvania, eastern Ohio, and northern West Virginia and includes about 300 mines.

The general allegations of the complaint are that the aforesaid rate of 88 cents is excessive and unreasonable in and of itself; that it is discriminatory and constitutes an undue preference and advantage to the shippers of other localities over those of the Pittsburgh district and subjects said district to undue and unreasonable preference and disadvantage; and that a reasonable rate will not exceed 50 cents per ton. It is specifically asserted that the present rate has been fixed by agreement among the railroads so as to discriminate against the Pittsburgh field in favor of the West Virginia fields; that the cost of producing coal is considerably greater in the Pittsburgh mines than in the West Virginia mines and that under the influence of existing freight rates the latter mines have increased their production proportionately more rapidly. In their brief the complainants summarize their position as follows:

They are entitled to a fair and reasonable rate from the Pittsburgh district to Ashtabula Harbor, considered with reference to the cost of the service and the value of the service; the rate now in effect, when viewed in the light either of the cost to the carrier of hauling the coal or the value of the service rendered to the shipper or to the consumer, is extortionate; and there are no other considerations which might enter into the determination of a fair rate which would justify the rate in question.

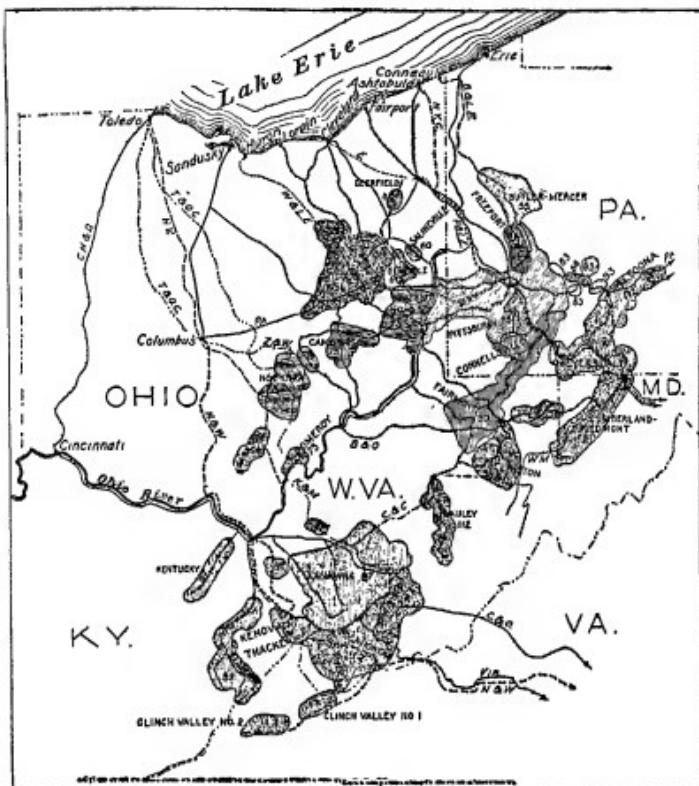


Figure 41: Lake Cargo Coal Groups

The defendants deny the allegations of the complaint and contend that the rate in question is reasonable.

Testimony in this proceeding was taken by the Commission on five separate occasions; extensive briefs have been filed and oral argument made by the interested parties. The voluminous record thus submitted contains much information that is helpful to a determination of the issues involved.

The coal moving over the New York Central lines from the Pittsburgh district to Ashtabula is transported practically in solid trains. Throughout the Pittsburgh district are various points on

the Pittsburgh & Lake Erie road known as assembling yards. The empty cars are distributed to these yards and thence switched out to the mines. After loading, the cars are moved back to the assembling point and there made into solid trains for road service. The movement to Ashtabula is via the Pittsburgh & Lake Erie Railroad, Lake Shore Junction (Youngstown, Ohio), and Lake Shore & Michigan Southern Railway in trains averaging 65 cars each of 42 to 44 tons per car.

The coal moving via the Pennsylvania lines originates on the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad, the Monongahela and Pittsburgh divisions of the Pennsylvania Railroad, and the West Pennsylvania Railroad. It passes from the initial lines to the Pittsburgh, Fort Wayne & Chicago Railway and Pittsburgh, Youngstown & Ashtabula Railway, which transport it to Ashtabula. All of this traffic moves via Conway, Ohio, which is a very large yard and an assembling point for freight consigned to various destinations. The general superintendent of these lines testified that the movement into Conway is "not at all exclusively" solid train loads, and that his road makes no effort to move it in that manner. He further stated that from Conway to Ashtabula the average train load of lake coal contained about 40 cars, with an average tonnage of from 40 to 44 tons each.

While Ashtabula is distant from Pittsburgh proper only 124.6 miles via the Pennsylvania lines and 128.1 miles via the New York Central lines, the average distance from the district was stated by the assistant freight traffic manager of the Pennsylvania lines to be 148 miles via his lines and 152 miles via the New York Central lines. These figures, however, are based exclusively on mileage and take no account of the tonnage from the different mines. Upon the latter basis, by computing the actual railroad mileage and the actual tonnage from each mine, the weighted average distance is approximately 148 miles. This corresponds with the mileage given in a statement filed by the Pennsylvania Company in Investigation and Suspension Docket Number 26, the *West Virginia Lake-Coal case*, 22 I. C. C. Rep. 604, and will be used in this case as the distance a ton of lake coal is transported from the Pittsburgh district to Ashtabula, although our general conclusion would be no different if "straight" averages were to be used.

During the past 11 years the rate from the Pittsburgh district to Ashtabula Harbor, free on board cars there, has increased 15 cents, as follows:

TABLE 38—INCREASE IN FREIGHT RATES, 1901-1911

Year	Rate per Net Ton Cents	Year	Rate per Net Ton Cents
1901	73	1907	88
1902	73	1908	88
1903	83	1909	88
1904	83	1910	88
1905	83	1911	88
1906	83		

Owing to the prevalence of rebating prior to the amendments of 1906 to the act to regulate commerce, it was urged that little reliance can be placed upon the accuracy of this rate as an indication of the actual charge for transportation during that period. From 1887 to 1900 the rate fluctuated—being successively \$1, \$0.90, \$0.85, \$0.90, \$0.70, and \$0.80—and a Pittsburgh operator testified that it was commonly understood by all shippers that there was a refund from this published rate to the lake shippers.

While the rate increased 20%, the increase from 1901 to 1910 in tonnage of lake coal received over defendants' lines at Ashtabula was approximately 320%, as shown by the following table:

TABLE 39—INCREASE IN TONNAGE SHIPPED, 1901-1910

Year	Coal Shipped Net Tons	Year	Coal Shipped Net Tons
1901	1,318,860	1906	2,619,483
1902	1,405,205	1907	3,235,538
1903	2,046,442	1908	3,027,538
1904	1,980,104	1909	3,167,851
1905	2,051,152	1910	5,573,392

Practically all of this tonnage originated in the Pittsburgh district, the record showing that for the year 1910, 4,814,526 tons moved over defendants' lines, of which the New York Central lines transported 2,221,312 tons and the Pennsylvania lines transported 2,593,214 tons. This movement, being restricted to the period of open navigation, was from about May 1 to Novem-

ber 15, a fact which makes the traffic desirable alike to the producers and the carriers. It comes at a time when the movement for domestic use has fallen off and when equipment is required at Ashtabula to transport the great volume of iron ore.

It is the contention of complainants that this ore movement is an important factor in the consideration of the cost of hauling the coal because it serves to remove the expense of any back haul of empty cars. An exhibit submitted by the deputy collector of the port of Ashtabula shows that in 1909 a total of 9,027,237 net tons and in 1910 a total of 10,751,599 net tons of ore were received at that point. It was testified that this tonnage was shipped over the lines of defendants as far as Youngstown, Ohio, and that about 60% of the movement via the New York Central lines was to the Pittsburgh district. The general superintendent of the Pennsylvania lines stated that in 1910 his lines moved out of Ashtabula 79,592 carloads of ore. If, as before shown, the same lines moved into Ashtabula, in 1910, 2,593,214 tons of coal, it appears that on basis of his estimate of from 40 to 44 tons of coal per car the number of cars of lake coal hauled from the Pittsburgh district to Ashtabula by the Pennsylvania lines was about 61,000, or over 18,000 cars less than the number of cars used in the ore movement from Ashtabula via the same lines. On behalf of the carriers it was suggested that the ore and coal movements not being strictly contemporaneous there resulted a corresponding amount of back haulage. However, it is undisputed that the volume of ore and coal tonnage is heavy during the open lake season and that each constitutes, in a measure at least, a back haul for the other; and since the ore tonnage is much greater than the lake-coal tonnage, there would appear to be ample ground for the assertion that there can be empty haulage for only a small part of the cargo coal, due possibly to the contingencies attendant upon vessels going and coming.

Much stress is laid by complainants upon the charge that by agreement among the railroads the rate of 88 cents was fixed so as to discriminate against the Pittsburgh field in favor of the West Virginia fields and that this rate is not the result of normal competition between the railroads running from the Pittsburgh district to Lake Erie or between those roads and others serving the West Virginia districts. It is a matter of record that the custom had obtained for many years for the representatives of the initial

carriers of lake-cargo coal from Pittsburgh, Ohio, and West Virginia districts to meet and determine what rates should prevail from the mines to the Lake Erie ports. The rates so fixed from the West Virginia districts until March 1, 1912, follow:

TABLE 40—FREIGHT RATES FROM WEST VIRGINIA DISTRICTS

District	Rate per Net Ton Cents	Differential in Favor of Pittsburgh Cents
Pittsburgh, Pa.	88	..
Pocahontas, W. Va.	112	24
Kanawha, W. Va.	97	9
Fairmont, W. Va.	96 $\frac{3}{4}$	8 $\frac{3}{4}$

On basis of the average distance to all lake ports given in defendants' brief (not the weighted average) the ton-mile revenue accruing to the carriers under these rates is as follows:

TABLE 41—TON-MILE REVENUE TO CARRIERS

District	Distance Miles	Ton-Mile Revenue Mills
Pittsburgh, Pa.	160	5.5
Pocahontas, W. Va.	434	2.8
Kanawha, W. Va.	400	2.4
Fairmont, W. Va.	248	3.9

It will be seen that the carriers in fixing the rates from these competing mining districts practically disregarded distance as well as the fact that the rail competition from the Pittsburgh district to Lake Erie may be expected to be, under competitive conditions, much greater than from any of the West Virginia fields. In March, 1909, the traffic managers of the interested lines, at a meeting in New York, decided to increase the differentials between the Pittsburgh and West Virginia fields by advancing the Pocahontas and Kanawha rates $9\frac{3}{4}$ cents each and the Fairmont rate $3\frac{1}{4}$ cents. This proposed change was first enjoined by a court and later suspended by this Commission. The propriety of the increased rate was passed upon in the *West Virginia Lake-Coal case* decided concurrently herewith, 22 I. C. C. Rep., 604, and the report therein is referred to for a statement of the conditions prevailing in the West Virginia fields.¹

¹The Commission here considered the rates on lake cargo coal from the Fairmont, Kanawha, Thacker, New River, and Pocahontas districts in West Virginia.

(Footnote continued on page 534)

For 10 years prior to March 1, 1912, the differentials before shown were unchanged. Under this relation of the rates the coal tonnage from the West Virginia mines to the lake ports has increased from 739,011 tons in 1901 to 7,279,384 tons in 1911, or an increase of approximately 885%, while the tonnage from the Pittsburgh district to the lake ports has increased from 2,704,059 tons in 1901 to 10,197,127 tons in 1911, or an increase of approximately 277%. During the same period West Virginia's proportion of the total lake-cargo coal shipped from the Pennsylvania, West Virginia, and Ohio districts increased from 14.13% to about 34.19%, while the proportion shipped from the Pittsburgh field decreased from 51.69% to about 46.50%.

That this rate adjustment is not justified by any difference in the expense of producing coal is established by the testimony, which shows that it costs considerably more to mine a ton of coal in the Pittsburgh district than in West Virginia. The figures submitted by the Pittsburgh Coal Company, one of the largest shippers in the district, show that the total cost of production, including all overhead charges, of a ton of run-of-mine coal in 1905 was 89.43 cents, and in 1910 it was 97.82 cents, while the cost of three-quarters coal, which forms the greater part of the lake-cargo coal, is estimated at 10 cents additional. As against these costs, the testimony is that the West Virginia operators can and do sell at a profit their run-of-mine coal for as low as 65 cents per ton and their three-quarters coal (Fairmont) for 68 cents. It would seem to be safely within the range of actual experience as reflected in the various exhibits submitted in this case to say that it costs from 80 cents to \$1 in the Pittsburgh district and from 50 to 60 cents in the West Virginia districts. In both fields instances are recorded which lie outside of this range.

A comparison of the rates from West Virginia and Pittsburgh to other markets supports complainants' contention that no ad-

(Footnote continued from page 533)

The carriers serving the districts named proposed, by tariffs duly filed, to increase their rates $3\frac{1}{4}$ cents from the Fairmont district and $9\frac{1}{4}$ cents from each of the other districts. In that case it found that the increased rates from the Pocahontas and Thacker fields proposed by the Norfolk & Western Railway were justified, but that as to the Chesapeake & Ohio, the Kanawha & Michigan, and the Baltimore & Ohio railways no showing was made which would justify us in holding that the proposed increased rates from the Fairmont, Kanawha, and New River fields were just and reasonable. While the increased rates proposed by the Norfolk & Western were approved, the tariffs carrying such increases were withdrawn and the rates in force prior to the proposed increase were reestablished.

vantages were given by the carriers to Pittsburgh operators to offset the lower basis from West Virginia to the lake. On coal shipped to the Atlantic seaboard for transshipment, the advantage in rates is with West Virginia, although in some instances it is not so accessible to the market. The following table shows some of the rates to tidewater, outside the capes, from Pittsburgh and other districts:

TABLE 42—FREIGHT RATES

District	Port	Railroad	Dis- tance <i>Miles</i>	Rate per Ton per Net Ton <i>Mile</i> <i>Mills</i>
Pittsburgh	Curtis Bay	Baltimore & Ohio..	299	\$1.28 4.28
New River	Newport News	Chesapeake & Ohio.	426.8	1.25 2.93
Clinch Val. No. 2 ..	Lamberts Point	Norfolk & Western.	458.3	1.25 2.73
Latrobe	Canton Piers	Pennsylvania	291	1.05 3.61
Kanawha No. 3 ..	Newport News	Chesapeake & Ohio.	551	1.34 2.43

In defending the rate of 88 cents to Ashtabula, which affords a ton-mile revenue of 5.94 mills under the weighted average distance of 148 miles, and approximately 5.87 mills under the straight average mileage stated in defendants' supplemental brief, the counsel for defendants rely upon twelve decisions wherein the Commission fixed rates on coal yielding per ton-mile revenues of 5 mills and upward. These rates apply between points such as Duluth to St. Paul; Chicago to Fort Dodge, Iowa; Oklahoma and Arkansas to Texas and Louisiana points; Wyoming points to Idaho points, and so forth, and the circumstances and conditions surrounding the traffic are so dissimilar in essential respects to the transportation from Pittsburgh to Ashtabula that it is difficult to see how these cases can be of assistance to the Commission in the present proceeding.

Chapter one of the argument in defendants' brief is devoted to an effort to show that "a higher rate for the identical service performed less efficiently has been approved by the Commission" in the case of *Imperial Coal Co. v. P. & L. E. R. R. Co.*, 2 I. C. C. Rep., 618. This case was decided on March 23, 1889, within two years from the effective date of the original act to regulate commerce. That conditions have materially changed since that time is demonstrated by the fact that in 1890 the freight density per mile of line operated of the Pittsburgh & Lake Erie Railroad

was 2,324,243 ton-miles as against 9,224,394 ton-miles in 1911, while the operating expense per ton-mile of that road decreased from approximately 6.58 mills in 1890 to less than 4 mills in 1911.

We have already given figures showing the increase in the lake-coal tonnage from the Pittsburgh district. Taken at their face value, without reference to other data, they would appear to suggest undoubted prosperity in the coal industry in that district. By comparison with the figures representing lake tonnage from the West Virginia district it will be observed that there has been relative retrogression and corresponding lack of prosperity. Not only in the instant case, but also in other proceedings now pending or recently decided, the position was quite generally taken by witnesses representing the mining interests that lake-cargo coal must to some extent be looked upon as surplus product which enables the operators to keep the mines in operation for a greater number of days in each year, to maintain their business organization intact, to hold the miners together, and to enable them to earn living wages. Defendants laid some stress upon the increased intensity of competition among the various coal fields, especially between the Pittsburgh and West Virginia fields. A general survey would strongly support this view. It is unquestioned that wages and the standard of living in the Pittsburgh district are generally higher than in most of the West Virginia districts, and that the cost of mining as a whole in the former district is greatly in excess of the cost in the latter, the exact extent of which is indicated in tables hereinafter given. Whatever weight it may be permissible under the statute to give to considerations of this kind in the determination of a question like that presented here, it would seem that wages of miners and their standard of living should be kept in view, and that great issues affecting them should not be decided without at least bringing their interests into the horizon of consciousness. Counsel for defendants argued that the profits of operators should be considered in this case. We interpret his argument to mean that all the conditions of every kind whatsoever surrounding this coal industry, which may be directly or indirectly affected by the rates, such as the profits of the operators and carriers, the wages and standard of living of the miners and railway employees, may be rightfully considered. Whatever legal limitations may be

imposed upon this view by the act to regulate commerce as at present interpreted, from the point of view of public policy and humanity, considerations like those adverted to by counsel should most assuredly not be ignored.

The actual condition of the operators in the Pittsburgh district was described in great detail and some question was raised regarding the accuracy of the situation as depicted. Detailed exhibits relating to items of expense in mining, wages, prices, and so forth, were introduced. After giving due consideration to the doubts cast upon their actual condition we are inclined to think that when witnesses and counsel for complainant said that generally speaking the operators in the Pittsburgh district were now standing with "their backs against the wall" and "struggling for existence," the situation was possibly not greatly exaggerated so far as this record discloses.

Not only in the Pittsburgh district, but in the Ohio districts—controversies regarding which are now pending before the Commission, and voluminous testimony with respect thereto already submitted—the desire to keep down the cost of mining has apparently resulted in wasteful mining operations, and to that extent has forever deprived the world of that much of its fuel supply. There is presented here, therefore, a problem in conservation of the most practical character, commented upon in the record at length, yet quite out of the range of our powers under the act to regulate commerce.

To reinforce what has been said with respect to mining conditions in the Pittsburgh district we give below a few comparisons based upon the testimony and exhibits in this case:

TABLE 43—ANALYSIS OF COST OF PRODUCTION, 1905-1910

Item	1905	1906	1907	1908	1909	1910
Labor	\$0.6125	\$0.6374	\$0.6696	\$0.6782	\$0.6704	\$0.7187
Supplies .....	.0805	.0791	.0942	.0983	.0794	.0858
Fuel .....	.0160	.0138	.0170	.0205	.0194	.0191
Cost at mine.....	\$0.7090	\$0.7303	\$0.7808	\$0.7970	\$0.7692	\$0.8236
General office expense.....	\$0.0347	\$0.0279	\$0.0306	\$0.0431	\$0.0391	\$0.0360
Taxes, etc. ....	.0414	.0293	.0354	.0432	.0382	.0355
Depreciation .....	.0379	.0326	.0241	.0294	.0280	.0273
Royalty .....	.0713	.0736	.0828	.0863	.0674	.0558
Total overhead charges exclusive of bond interest and dividends.....	\$0.1853	\$0.1634	\$0.1729	\$0.2020	\$0.1727	\$0.1546
Total cost	\$0.8943	\$0.8037	\$0.9537	\$0.9990	\$0.9419	\$0.9782

TABLE 44—COST OF COAL ON CARS—WEST VIRGINIA

Item	Per Ton
Cost at face—average of 12 mines.....	\$.2024
Labor (\$.2046 less \$.0682).....	.1364
Supplies—same as Pittsburgh .....	.0941
Fuel—same as Pittsburgh.....	.0185
Total	\$.5414

TABLE 45—WEST VIRGINIA'S ADVANTAGE IN THE COST
OF MACHINE MINING

Item	Cost per Ton	Difference
Coal from 5 to 6 feet:		
Pittsburgh	\$.5425	.....
Kanawha—		
Eagle seam .....	.3531	\$.1894
Boomer and other.....	.3050	.2375
Cabin Creek .....	.2830	.2595
Pocahontas-West Vivian .....	.2885	.2540
Island Creek-Holden .....	.2491	.2034
New River-Thayer .....	.4140	.1285
Coal River district.....	.3166	.2259
Coal from 7 to 8 feet:		
Pittsburgh .....	.4540	.....
Fairmont—		
Mongah mine No. 8.....	.2714	.1826
Gypsy mine .....	.2633	.1907
Federal Coal Co.....	.2901	.1549
Coal River district: Dorothy.....	.3166	.1374
Pocahontas district: Pocahontas Coal Co.....	.2168	.2372

Turning now to the condition of the carriers defendant in this case we call attention to a table (Table 46) which has been compiled from the annual reports filed with this Commission. This table shows in a general way the financial condition of each of the defendants under rates in force during the years named.

In the *West Virginia Lake-Coal case, supra*, there were introduced in evidence by defendants not only extensive data bearing upon the cost of transportation, but equally extensive investigations were conducted at the instance of the Commission. The statistical compilations thus obtained show in great detail the assembling and other terminal costs connected with the transportation of lake-cargo coal, as well as the line or movement expenses. In the instant case one comprehensive volume of 134 printed pages was introduced by a witness for complainant, showing in careful detail the manner in which the various primary accounts had been treated, and what statistical processes

TABLE 46—ANNUAL AVERAGE, 1907-1911: FINANCIAL RESULTS AS SHOWN BY INCOME ACCOUNT

Item	Pittsburgh & Lake Erie	Lake Shore	Pennsylvania Company	Pittsburgh, Cincinnati, Chicago & St. Louis	Pennsylvania Railroad Company	Wheeling & Lake Erie
Operating income, being operating revenues less operating expenses and taxes	\$6,492,477	\$3,494,512	\$1,3,805,107	\$9,184,485	\$40,525,075	\$79,118
Other income, being rents and returns on securities held	188,896	7,311,854	13,022,473	6,711,775	16,936,821	137,563
Gross corporate income	\$6,681,373	\$20,806,372	\$26,827,580	\$9,856,260	\$56,561,896	\$416,681
Payments for lease of road or rent (or loss) of other property	\$ 645,157	\$ 2,227,155	\$10,229,587	\$2,168,144	\$ 9,495,759	\$100,084
Interest on funded debt (accrued)	220,000	5,893,711	5,814,536	2,666,199	12,335,208	489,657
Dividends from income*	**1,531,999 (to 12 to 18) (to 12)	7,308,449 (6 to 8) 4,161	14,600,000 (3½ to 5) 2,034,937	12,683,411 (6 to 7) 1,925,620 2,594,449	21,483,674 175,351 5,035,099	19,168 1,206 ... 16,201
Per cent on stock	4,161	486,685	1,257,133	773,346	6,058,341	38,633
Miscellaneous deductions	1,699,755	2,034,937	3,08,057	1,152,933	5,035,099	16,201
Appropriations for improvements, etc	2,580,300	2,765,434	1,663,388	1,348,412	931	189,017
Average surplus from each year's business carried to profit and loss						
Total deductions	\$6,681,373	\$20,806,372	\$26,827,580	\$9,856,260	\$56,561,896	\$416,681
						\$115,787
						\$1,533,938

*Does not include additional dividends declared from surplus.

**Extra dividends from surplus in 5 years, 65%.

†Extra dividends from surplus in 5 years, 33½%.

††Does not include 2½% on preferred and 2% in common, payable in 1907.
‡Deficit.

TABLE 47—ESTIMATED OPERATING EXPENSE PER TON FOR 148 MILES, AVERAGE FOR ALL FREIGHT, FOR FISCAL YEAR ENDING JUNE 30, 1911

Item	Pittsburgh & Lake Erie	Lake Shore	Pennsyl- vania Co.
Percentages products of mines are of tons carried	77.21	57.87	72.99
Average haul, miles	64.25	167.14	80.72
Average tons per train	1,214	603	487
Operating expense per ton for average haul:			
Maximum, cents	23.85	63.25	32.22
Minimum, cents	20.22	49.71	27.28
Allowing 10 cents as independent of distance, the road expense is:			
Maximum, mills	2.156	3.186	2.753
Minimum, mills	1.592	2.376	2.141
Total operating expense for 148 miles, per ton:			
Maximum, cents	41.91	57.45	50.74
Minimum, cents	33.55	45.16	41.69

had been subsequently resorted to in arriving at the cost of transporting lake-cargo coal over some of the defendants' lines. A witness for the interveners testified in much detail regarding the cost of assembling coal in the Pittsburgh district and related items based upon coal-company experience. The testimony of these two witnesses is mutually supplementary and throws much light upon the expense of transporting coal from the Pittsburgh district to Ashtabula. We have supplemented the analyses made by the various witnesses in these different coal cases by independent tests of our own. In one of these processes we made two general assumptions—(1) that all branches of the defendants' business yield an equal percentage of net revenue, and (2) that the operating ratio of all branches except freight is 100%, and that, therefore, freight yields the entire net revenue earned by the carriers. It is obvious that the figures which are based upon the assumption that the freight branch of the business yields the entire net revenue results in figures representing the minimum freight cost, while the other set, based upon the assumption of equal net revenues in all branches, results in maximum figures. These comparisons seem to show that the cost statistics submitted by complainants are quite within the range of actual experience if the coal traffic to the lake is considered by itself without reference to the traffic as a whole, but that they lie very near the minimum, if not below, rather than the average or the maximum. In one instance our check of figures would seem to

suggest that the minimum had been closely approximated, while in a part of another calculation the maximum had been somewhat exceeded.

Table 47, on the opposite page, indicates the maximum and minimum freight costs referred to above.

Taken all together these different statistical results point in the same direction and tend to show that the operating expense of transporting Pittsburgh coal to Ashtabula is probably less than one-half of the present rate of 88 cents.

Early in the hearing, petitioners submitted a series of requests for statistical information. During the course of the hearing and again at its close some of these requests were repeated, in groups or in their entirety. They included requests for copies of defendants' annual reports to their stockholders for the years 1909 and 1910, and, viewed generally, they related to such matters as tonnage involved, the number of men and their wages concerned in the assembling and movement of lake coal, empty-car movement, and so forth. After considering carefully all the information available in connection with the West Virginia cases, the testimony and exhibits of the various witnesses in the instant proceeding, and the data contained in the annual reports filed by the defendant carriers with this Commission, we did not feel justified in putting defendants to the trouble and expense of furnishing the information called for by the petitioners. During the course of the hearing, and while some of these requests were urged with particular force, we made a careful estimate of the amount of time and money which compliance with such requests would involve. While some of them would have cost very little or nothing, all of them taken together would have involved the expenditure of a very substantial sum of money. It is a fact that the defendants practically ignored all testimony bearing upon the cost of conducting this business, except for general allegations of counsel upon the argument that he was not at all clear that expenses did not increase with improved facilities. If, contrary to general impression and logical expectation, a more highly developed and better equipped railway cannot do business on as low a basis per unit of traffic as a railway less developed and with poorer equipment, that conclusion should be clearly and unmistakably demonstrated and proved, and not be accepted on vague impressions or general allegations before consequential action is

taken based upon it. Since some of the information requested by the petitioners bearing upon the cost of conducting transportation in the coal trade could have been furnished without appreciable trouble or expense, it must be presumed that the defendants realized the futility of defending the 88-cent rate by reference to the cost of conducting the business to which the 88-cent rate applies. Whether this was the view of the carriers or not, such is the fact. Every combination and analysis of figures which has been, and we believe can be, legitimately made, or with any degree of propriety applied, points unmistakably to a cost of transportation much too low to serve in the slightest degree to defend the 88-cent rate.

To be sure, costs do not determine rates; yet most rates have within them as a constituent the element of cost. Cost is generally an important element in arriving at a judgment with respect to a rate. What weight shall be given to that element as compared with all the other elements entering into a particular rate, such as the value of the service, with its bundle of constituents, and the various conditions surrounding the particular traffic, is a matter to be decided in each individual case. Questions regarding the calculation of the cost of service and the weight to be given to such cost suggest controversies which are as old as the railway itself. As between the two cardinal principles of rate making—the cost of the service and the value of the service—the first is decidedly more capable of exact determination and mathematical expression than the latter. If, as some would have us believe, no measure has yet been discovered for ascertaining the cost of the service, what measure is there suggesting anything definite and tangible and sufficiently practical in its application to carry conviction which can be applied to the value of the service? By which, after all, we mean to say little more than that the cost of the service is ascertainable with much more precision and capable of more tangible expression than the value of the service. Nevertheless both cost and value must be considered as well as all other elements entering into a rate.

As the annual reports to Congress demonstrate, this Commission has for many years felt the necessity of having information regarding the value of the physical properties of the carriers in the United States as an element in the valuation of their entire

properties. The want of this information is a serious handicap in the proper consideration and disposition of the instant case. There is before us nothing whatsoever upon which we could with any degree of confidence arrive at an approximation of the value of the property devoted to the public use and upon which these carriers are entitled to a fair return and to which the lake-cargo coal traffic should make its fair and just contribution. To be sure we have before us figures representing the aggregate outstanding bonds and stocks, but it is well understood that the total capitalization of a carrier is not necessarily a correct measure of the value of the property devoted by it to the public use, nor in many instances even a fair indication of what the value of such property might be. A compilation showing the comparative growth of capitalization and of traffic for all the railways in the United States reflects a gradual tendency toward a decrease in capital charges as the density of the traffic increases. For instance, in 1890 the capitalization per unit of traffic adopted in such a compilation was approximately 7.50 cents, while in 1909 it was approximately 5.25 cents. Because of the fundamental changes in the forms of accounts beginning with the fiscal year 1908, some of the defendant carriers have shown a marked increase in capital charges per unit of traffic in recent years, contrary to the general tendency. It appears that formerly some of them charged to operating expenses great sums which, under the new rules of accounting, cannot thus be charged, and in consequence the capital account has been correspondingly increased. This would account in part at least for the deviation from the general rule. It is difficult to say, in the absence of proper valuation figures, what additions should be made to operating expenses for capital charges. For the leading railways in the United States during the year 1911, 13 had an operating ratio in excess of 75%; 32 between 65 and 75%; 15 from 55 to 65%; and 4 under 55%. That of the New York Central & Hudson River Railroad Company was 73.9; of the Pennsylvania Railroad, 72.15; of the Pennsylvania Company, 68.28; while that of the Pittsburgh & Lake Erie was but 49.42. These ratios would seem to indicate that if there is added to the ascertained operating expense 50% for capital charges, we arrive at an equivalent of the operating ratio of 66%, which is approximately near the lower margin of averages for the leading railways in the United States. If

two-thirds of the operating expenses were to be added to such expenses the equivalent of an operating ratio of 60% would be arrived at, and a fairly liberal treatment would be accorded to the carrier in this respect. All of which, however, simply goes to confirm the view that in the absence of reliable figures which represent the value of the property, estimates of cost, such as those which stand upon the record in this case, are mere approximations—especially when applied to a specific branch of the traffic—which are interesting and to a certain extent useful as general guides, but which cannot be relied upon as decisive factors.

Defendants have argued with much pertinacity that the pending question is exclusively a question of differentials. The differential is certainly involved, because a change in one of a series of related rates changes the relation among all of them. While the differential is involved, that is not all that is involved. The testimony of the defendants makes the Pittsburgh-Ashtabula rate the keystone of the entire system of lake-coal rates. This keystone is involved in this proceeding. It determines the relative level of all other rates in the structure and should, therefore, be considered carefully and deliberately as a rate in and of itself without reference to any other rate.

Viewed in the light of all the evidence and our own inquiries, the 88-cent rate looks high. Complainants assert that there exists no power anywhere to let a shipper into a market by advancing the rate to another shipper. If the rate which the other shipper is paying is unduly low, we doubt whether this contention is tenable, and to this extent the general principle appealed to does not appear to us to be sound. But even though counsel have stated their contention somewhat too broadly, as applied to the situation in the Pittsburgh district, it appears to point to the truth in this case. We think it only a fair inference from this record that the Pittsburgh rate was raised step by step, not to bring it up to a level which the carriers might have regarded and defended as reasonable, but in order to let certain competing coal fields into the lake trade. And the record is conclusive that it is not a competitive rate.

Defendants argue that the lack of prosperity among the Pittsburgh operators is due to excessive competition among the operators in the different districts. Granting that this be so, does that

justify the imposition of an excessive rate upon the traffic from one of the competing fields? The Pittsburgh field is entitled to a reasonable rate whether it brings the expected relief or not and irrespective of the specific channels into which the amount of the reduction in the rate will flow.

By comparison with the rates from other important coal-producing areas to important consuming areas, such as the rates from the West Virginia and Illinois fields, the Pittsburgh rate is high. It should also be borne in mind that the rail rates on lake-cargo coal are in reality portions or divisions of through charges covering long-distance traffic.

We have made careful estimates of the probable effect upon the defendant carriers and upon the traffic from the various coal fields of a reduction in the 88-cent rate to various levels from 50 cents up. In making these estimates we have considered not only the total tonnage directly involved, but also the collateral tonnage and the effect of the whole alike upon carriers, operators, and consumers. This means that we have also considered readjustments which it may be necessary to make in other rates through the establishment of various differentials and their probable effect upon the carriers and all other considerations in the record which it was possible for us to bring to bear upon the issues here presented. After very careful deliberation and consideration of all the factors which enter into the contention as presented by both sides in this controversy, we believe that the rate on lake-cargo coal from the Pittsburgh district to Ashtabula should hereafter not exceed 78 cents per net ton.

From the point of view of the specific cost of doing this particular business this rate is still too high; but, as we have said before, cost is only one of the elements entering into a rate. When we consider the coal rates from all the fields which will be affected by this change in the Pittsburgh rate, the disturbance in established differentials, the possible deflection of the currents of coal trade and its effect upon operators elsewhere, the effect upon the carriers directly involved and the indirect effect upon other carriers, and all the other valid considerations, we are forced to the conclusion that a rate lower than this would not be just and reasonable under the conditions disclosed by this record.

The intervening defendant and its Pittsburgh connections will

find this traffic profitable to the extent that they can get it. The necessitous circumstances in which this defendant finds itself as a result of events not connected with the Pittsburgh lake-coal traffic cannot be accepted as the measure of reasonableness of a rate to be imposed upon that traffic in the future.

In view of all the matters herein set forth it is our opinion, and we therefore find, that the present rate of 88 cents is unjust and unreasonable and that the defendants shall maintain for a period of two years from the date hereof a rate not to exceed 78 cents from the mines in the Pittsburgh district to Ashtabula Harbor, Ohio.

An order in accordance with these conclusions will be issued.¹

37. KANTOR COPPER COMPANY—WITHDRAWAL FROM COPPER EXPORT ASSOCIATION

The Kantor Copper Company, a member of the Copper Export Association, operated smelters in the West for refining copper from ores purchased from independent mining companies. The normal rate of production was 1,000,000 pounds of copper per month, and approximately 40% of the sales were made in foreign markets. The trade name under which the product was sold was well known among buyers of copper in all parts of the world. In the summer of 1922, the advisability of remaining in the association was questioned.

During the severe decline in the price of copper in 1920, foreign and domestic demand almost ceased. The existence of the oversupply which was left to refiners and producers decreased the price, and bankers who had made loans on copper doubted the value of the security of the loans. In 1921, the Copper Export Association (under the Webb-Pomerene Act) was formed to finance inventories and promote cooperation in developing sales in foreign markets.² The association included all companies

¹Subsequent readjustments in the lake-cargo coal rate structure were discussed at length in the *Lake Cargo Coal case*, 46 I. C. C. 159, which established new differentials. See that case, and especially the cases cited at pp. 160-162. The map reproduced on page 529 is from that case.

²The Webb-Pomerene law (Export Trade Act) was enacted April 10, 1918. "It was the outgrowth of a report to Congress by the Federal Trade Commission in 1916 . . . Under the Act, 'associations' may be formed for the sole purpose of engaging in export trade, these associations to be exempt from the Sherman Anti-Trust Law of the United States, and from a certain portion of the Clayton Act, with the proviso that there shall be through the association no restraint of

which produced copper in the United States, except one company financed by foreign capital. About 90% of domestic production was controlled by the association. The members were pledged not to sell copper abroad except through the association. Foreign orders received by the association were allocated to members according to the proportion of each producer's stock, on the first of every month, to the total stock. No charge was made for membership; expenses of the association were paid for by adding a fixed percentage to all orders allocated to producers. Cable charges were prorated to members according to the use each made of the service. Competition and price cutting among domestic producers in order to secure the greatly decreased quantity of foreign orders was eliminated.¹

In 1921, a stock of 400,000,000 pounds of copper was pledged by members as security for \$40,000,000 debenture bonds issued by the association and sold to the public. The proceeds of the bonds were allotted to members on the basis of the quantity of copper contributed. This allowed producers to secure cash for inventories which could not be disposed of at that time. As the copper was sold by the association, the funds received were used to call the bonds. By the middle of 1923, all outstanding bonds had been called.

trade within the United States, no restraint of the export trade of any domestic competitor, no enhancing or depressing of prices, or substantial lessening of competition within the United States"—*Commerce Reports*, February 27, 1922, page 481.

The report of the Federal Trade Commission which was the basis of the law was entitled *Cooperation in Foreign Trade*. A detailed discussion of the advantages of Webb Law Associations appears in *American Foreign Trade*, by Notz and Harvey. The considerations which led a machinery manufacturing company to withdraw from such an association are presented in "The Palmer Manufacturing Company," a case study in business, *Harvard Business Review*, vol. 1, p. 240.

¹The Copper Export Association was financed by the sale of \$20,000,000 Gold Notes (8%), which were secured by 400,000,000 pounds of refined copper (at 10 cents per pound). The sums required for the payment of principal and interest were guaranteed by the member copper-producing companies. The notes were dated February 15, 1921, and were to mature in instalments, the final instalment maturing in 1925. They were subject to redemption as a whole or in part on any interest date at par plus a premium of 1% for each year or portion of year between the date of redemption and the maturity date for the note redeemed. At the time of the issue of the notes the market price of copper was 13 cents, and the trust agreement provided that copper could be withdrawn only upon payment to the trustee of 12½ cents (in cash or notes) per pound of copper withdrawn. One-year notes were offered at par and interest, to yield 8%; two-year notes at 99¾ and interest, to yield 8.15%; three-year notes at 99¼ and interest, to yield 8.30%; and four-year notes at 99 and interest, to yield 8.30%. The last of the notes were redeemed February 15, 1923, when \$6,000,000 of the 1924 maturity and \$12,000,000 of the 1925 maturity were redeemed at 101 and 102, respectively.

The export orders received by the Kantor Copper Company from the association were 5% to 10% of the company's production. It was an established policy of the company not to accumulate stocks and, since no mines were owned, ores were bought only when orders for copper were assured. The method of allocating orders adopted by the association, therefore, was a disadvantage to this company. During the first six months of 1922, foreign demand for copper increased. Because the company was a member of the association, however, it was prevented from soliciting orders independently in foreign markets. The company had benefited from its membership in the association by exchange of trade information and by the close contact with other producers. Statistics of stocks, production, and sales were distributed to members. The association maintained cable service to foreign markets.

In the opinion of the Kantor Copper Company price cutting had been prevented, and the producers were able to sell at the highest prices possible under the circumstances. By withdrawing from the association, the company could obtain greater freedom in attempting to increase foreign sales. It was familiar with the requirements of foreign buyers, and the connections with foreign sales representatives could be resumed easily and without any considerable expense.

On the other hand, the disfavor of competitors might be incurred because the effectiveness of operations of the association was proportional to the degree of completeness of its control of domestic production. There was a possibility that other companies might follow the lead of the Kantor Copper Company, and thereby disorganize the market. However, it was executive opinion in the Kantor Copper Company that the majority of the members were satisfied with the volume of foreign sales received through the association. The company no longer could benefit from the intimate knowledge of the activities of other companies. The orders formerly received from the association were lost and its competition was encountered in the solicitation of orders. The officers of the Kantor Copper Company believed that a volume of export sales greater than that allocated to it by the association could be secured. The company, therefore, decided to withdraw from membership in the association and to begin sales on its own account.

38. MOWGLI COMPANY—RELATION OF A MANUFACTURER OF COCOA MATS AND MATTING TO FOREIGN COMPETITION

The Mowgli Company was organized in 1880 in the United States to manufacture rattan furniture, baby carriages, and cane fixtures. For several years the company tried to develop a use for the quantity of waste produced in the processes of separating the cane from the pith. About 1890, it was discovered that these shavings could be spun into a heavy yarn and woven into matting and door mats. Thus, it happened that the Mowgli Company entered the manufacture of mats and mattings. After a few years, it was discovered that mats of higher quality could be made from coir yarn, a yarn spun from the fibers of the cocoanut shell. By this time the Mowgli Company had become well established as a mat manufacturer. Consequently, it continued the manufacture of mats, but substituted coir yarn for waste material previously used. This coir yarn was imported from India. As this cocoanut fiber became the standard material for mats and matting, Indian companies began the manufacture of these products. In the United States, these companies sold to wholesalers. The process of manufacture did not require highly skilled labor, with the result that Indian coolies were used. Hence, labor costs for the manufacture of mats and matting in India were only one-fourth to one-third of the labor costs in the United States.

The higher labor cost was counterbalanced in some measure by the fact that domestic mats and matting were of higher quality; the machine operations in domestic manufacture produced a tighter weave than the hand-woven mat of India. The Mowgli Company sold its mats and matting to the same customers who purchased the cane furniture made by the company. By 1920, the demand for matting as compared with that of mats had almost vanished: the improved type of floor covering made of rubber and cork compositions had reduced greatly the demand for cocoa matting.

In 1897, the threat of foreign competition on mats was followed in the United States by high tariff duties. In 1909, the tariff was not changed, but in the act of 1913, it was reduced about 25%. There was no duty on coir yarn. During the period of high tariff on the manufactured products, domestic manufac-

turers produced most of the mats consumed in this country and were able to make profits.

The low tariff of 1913 did not result in a great increase in mat imports until 1918 because of war conditions. In the three years following 1918, however, imports increased to unprecedented proportions. In 1921, the manager of the Mowgli Company appeared before the Finance Committee of the United States Senate and urged higher rates of duty on the Indian product. It had become impossible, he said, for the product of domestic manufacturers to compete with the imported product, not only because of the lower tariff of the act of 1913 but also because of the increase in the general price level in the United States. No domestic manufacturers in the industry were operating at more than 25% capacity and necessity for the complete abandonment of domestic manufacture seemed probable unless a higher tariff was put into effect. The tariff act of 1922 doubled the duty on mats and raised the duty on matting 60%. The increase was less than the manufacturers deemed necessary, but nevertheless, it should have been of assistance. The tariff on mats and matting in the different tariff acts was as follows:

TABLE 48—TARIFF ON MATS AND MATTING, 1897-1922

Year	Mats	Matting
1897	4 cents per square foot	6 cents per square yard
1909	4 cents per square foot	6 cents per square yard
1913	3 cents per square foot	5 cents per square yard
1922	6 cents per square foot	8 cents per square yard

The Mowgli Company had to decide at this time whether or not to continue to manufacture mats and, if so, what steps to take to compete with the imported product. The sale of mats was a small part of the total sales of the Mowgli Company. However, an entire building was devoted to the manufacture of mats and the machinery represented a substantial investment. The company had approximately 30 power looms for weaving this coir yarn. If the manufacture of mats was to be discontinued, the machinery was valueless. The company was known in the mat trade as a producer of the best domestic mats, and should the manufacture of these products be discontinued, a part of the good-will of the trade might be lost. The proportion of laborers employed in the mat department was small, but

few of them could be used in other capacities in the plant and their dismissal appeared probable. In 1923, the mat department was able to operate at about 30% capacity. On this basis, there was no profit, although the mat department was able to bear a part of the general overhead of the company in addition to its direct costs.

The company had endeavored to increase the demand for mats by adapting them to new uses. The first idea that was developed was to make porch rugs of this cocoanut fiber. Although a few of these were sold, they did not prove satisfactory in use. The company then tried to introduce small cocoa mats in the automobile trade for use on running boards. For a year, the sale of these mats was extremely successful, but in the following year sales declined rapidly. This use of these mats proved to be a fad and it was evident that there was no permanent market in the automobile industry.

In addition to foreign competition, there was an added difficulty of competition from the domestic manufacturers of rubber mats. For many uses rubber mats were superior, but the Mowgli Company held that for door mats, the cocoa mat was unequaled.

The company decided to continue to produce cocoa mats. Moreover, the company decided to start an advertising campaign, which it expected might increase the sales of mats. The next question was whether the Mowgli Company should meet Indian competition by importing Indian mats and becoming wholesalers to that extent. All retailers carried a complete stock of mats from the most expensive of domestic manufacture to the cheapest of imported mats. The demand of the retailers for cheap Indian mats was a constant stimulus to the company to sell this product. A part of the officers of the company were of the opinion that in order to sell the maximum number of the company's high quality products, it should carry a full assortment of mats used in the trade. Other officers held that the sale of these cheaper mats might reduce the sales of the high quality domestic product. It might encourage wholesalers and retailers who had been buying the domestic product to carry the imported mats. There was a danger, furthermore, that the sale of these lower quality mats by the company might harm its reputation for the high quality domestic article. The sales force had been taught that the Mowgli product was superior to any other on the market. It

seemed a dangerous policy to a portion of the executives to sell both a high quality and poor quality article. The wholesale profit on manufactured mats, moreover, was narrow.

**39. HERIOT, DALKEITH & MOFFAT STREET RAILWAY COMPANY—
EFFECT OF A CHANGE IN PRICE LEVEL UPON
A PUBLIC UTILITY**

The Heriot, Dalkeith & Moffat Street Railway Company had been organized in 1899. It was situated near an eastern city with a population of about 900,000, and the $19\frac{3}{4}$ miles of line ran substantially parallel with one of the railroads which served that city. The street railroad served the three suburbs of Heriot, Dalkeith, and Moffat, but did not run into the city, although it connected at one point with the street railway of that city. The population of these suburbs, as given in the following table, increased about 27% from 1900 to 1915.

**TABLE 49—POPULATION OF HERIOT, DALKEITH, AND MOFFAT,
1900-1915**

Town	1900	1905	1910	1915	Increases
Heriot	6,578	7,054	7,924	8,611	30.9%
Dalkeith	4,584	4,702	4,797	5,606	22.3%
Moffat	5,442	5,959	6,316	6,928	27.3%
	16,604	17,715	19,037	21,145	27.4%

The greater part of the road's revenue was obtained from holiday traffic on Saturday and Sunday. The district was a favorite resort for picnickers from the city. In 1909, the competing railroad established a 15-mile zone around the city whereby commuters in this zone could buy 12-ride tickets at reduced rates. The Heriot, Dalkeith & Moffat Street Railway Company had decided that it was impossible to make a similar rate and gave up trying to compete for this commuting traffic after 1910. No competitive jitney lines ever were established, but the use of private automobiles by holiday seekers materially reduced the income of the company. First mortgage bonds, amounting to \$250,000, had been outstanding since they were issued in 1903. The interest charges on these was \$12,500 per year. Common stock, on which no dividends ever had been paid, amounted to \$300,000.

The cost of operation in the years 1900 to 1915 had been ris-

ing steadily, but the increase in the price level after 1915 made it almost impossible for the company to keep the costs below the gross revenue. Tables 50, 51, and 52 show the trend of operating expenses and operating revenues.

TABLE 50.—TREND IN OPERATING EXPENSES AND OPERATING REVENUES

Year	Operating Revenues	Operating Expenses	Net Operating Revenue	Deductions from Income	Surplus or Deficit for the Year
1900	\$14,535	\$21,244	\$ 6,709	\$ 1,261	\$ 7,970*
1901	18,563	24,991	6,428	4,856	11,284*
1902	25,133	25,261	128	7,265	7,393*
1903	37,231	31,378	5,853	5,768	85
1904	72,864	59,638	13,226	19,584	6,358*
1905	78,198	63,159	15,039	21,205	6,166*
1906	86,344	61,599	24,745	23,665	1,080*
1907	84,666	66,828	17,838	25,438	7,600*
1908	90,020	73,031	16,989	26,824	9,835*
1909	80,117	55,591	24,526	24,872	346*
1910	55,813	38,767	17,046	18,678	1,632*
1911	92,817	58,534	34,283	25,545	8,738
1912	95,006	59,702	35,304	23,396	11,908
1913	94,615	65,352	29,263	24,255	5,008
1914	95,224	65,204	30,020	25,079	4,941
1915	91,465	68,842	22,623	23,749	1,126*
1916	92,958	71,241	21,717	23,258	1,541*
1917	88,469	78,690	9,779	24,326	14,547*

*Deficit

In 1918, every possible means of reducing expenses had been considered carefully and there seemed to be no possibility of solving the problem this way. Even maintenance had been neglected to an unusual extent. The only method whereby the company could continue to operate seemed to be to increase the fares. The company then was collecting three 5-cent fares and one 6-cent fare from the different zones that had been established in 1915 when the latter had been increased in order to provide a higher passenger revenue without inconveniencing more than necessary the passengers who rode for a short distance. Prior to 1915, the fare had been 6 cents in each of the three zones. This change in the fare system did not result in a greatly increased revenue. In Table 53, gross earnings by days of the week from August 9 to December 31, 1915, that part of the year when increased fares were in effect, are compared with the similar period in 1914.

TABLE 51—RAILWAY OPERATING EXPENSES

	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
1. Ways and Structures										
(a) Maintenance of Way	\$ 493	\$ 3,852	\$ 5,639	\$ 6,446	\$ 7,713	\$ 8,988	\$ 10,898	\$ 7,446	\$ 7,531	\$ 6,050
(b) Maintenance of Electric Lines	1,111	837	911	996	838	1,128	1,404	1,505	793	762
(c) Buildings, Fixtures and Grounds	575	195	105	345	234	177	78	216	286	172
Total—Ways and Structures	\$ 2,179	\$ 4,834	\$ 6,715	\$ 7,787	\$ 8,785	\$ 10,293	\$ 12,380	\$ 9,127	\$ 8,939	\$ 6,984
2. Equipment										
(a) Maintenance of Cars	\$ 1,798	\$ 988	\$ 1,647	\$ 1,685	\$ 2,698	\$ 1,949	\$ 2,059	\$ 3,410	\$ 1,669	\$ 3,271
(b) Maintenance of Electric Equipment of Cars	3,324	804	1,260	1,064	1,272	1,593	1,733	1,796	2,477	2,288
(c) Miscellaneous Equipment Expenses	185	202	566	312	492	248	40	311	110	303
(d) Depreciation of Equipment							1,677	2,078	1,642	1,042
Total—Equipment	\$ 5,271	\$ 1,994	\$ 3,473	\$ 3,061	\$ 4,462	\$ 3,790	\$ 5,509	\$ 7,595	\$ 6,263	\$ 7,504
3. Power										
(a) Power Plant Buildings							\$ 13	\$ 63	\$ 2	
(b) Fixtures and Grounds							664	781	1,282	\$ 821
(c) Maintenance of Power Equipment							490	4,047	5,128	6,804
(d) Power Plant Employees							3,774	3,987	4,819	5,432
(e) Fuel for Power							7,195	7,492	7,608	14,739
(f) Other Power Supplies and Expense							597	566	474	426
(g) Power Purchase							2,593	2,102	2,174	2,088
Total—Power	\$17,915	\$14,715	\$14,649	\$14,063	\$16,623	\$15,565	\$14,735	\$17,700	\$25,342	\$26,360

TABLE 51 (*Continued*)—RAILWAY OPERATING EXPENSES

	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
4. Conducting Transportation										
(a) Superintendence of Transportation	\$19,473	\$14,779	\$2,079	\$2,188	\$2,229	\$2,333	\$2,389	\$2,615	\$2,751	\$3,046
(b) Conductors, Motormen and Trainmen										
(c) Miscellaneous Transportation Expenses										
Total—Conducting Transportation	\$21,193	\$16,133	\$21,723	\$21,369	\$21,920	\$22,921	\$23,104	\$23,490	\$24,601	\$25,078
5. Traffic										
(a) Traffic Expense										
Total—Traffic										
555										
6. General and Miscellaneous										
(a) General Expenses	\$ 7,247	\$ 5,407	\$ 6,676	\$ 7,545	\$ 8,086	\$ 8,230	\$ 8,853	\$ 6,887	\$ 7,439	\$ 7,382
(b) Injuries and Damages	1,656	1,933	3,056	3,352	2,601	1,923	2,403	3,575	4,444	4,444
(c) Insurance	2,086	838	1,318	1,349	1,872	1,342	1,297	1,447	1,464	1,750
(d) Stationery and Printing	445	431	196	274	305	222	339	360	258	348
(e) Store, Garage and Stable Expenses	112	83	121	171	201	237	316	343	200	481
(f) Rent of Tracks and Facilities	355	197	293	341	204	287	291	356	339	454
(g) Rent of Equipment	382	238	267	308	320	326	67	345	345	63
(h) Rent of Equipment and Other Buildings	533	53								
Total—General and Miscellaneous	\$12,846	\$8,840	\$11,897	\$13,339	\$13,439	\$12,536	\$13,566	\$13,313	\$13,574	\$14,919
Grand Total Operating Expenses	\$59,350	\$41,556	\$38,531	\$59,704	\$65,349	\$65,201	\$69,341	\$71,236	\$76,686	\$80,970

TABLE 52—RAILWAY OPERATING REVENUE

	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
1. Revenue from Transportation										
(a) Passenger Revenue	\$79,643	\$55,677	\$88,158	\$88,433	\$88,154	\$89,876	\$88,785	\$88,088	\$84,230	\$76,803
(b) Special Car Revenue				945	1,302	1,049	786	653	50	402
(c) Mail Revenue	199	150	200	200	200	200	200	200	200	635
Total—	\$79,842	\$55,817	\$88,358	\$89,578	\$89,566	\$91,125	\$89,771	\$88,796	\$84,865	\$77,395
2. Revenue from other Railway Operations										
(a) Station and Car Privileges	\$ 275	\$ 459	\$ 456	\$ 563	\$ 437	\$ 247	\$ 246	\$ 246	\$ 246	\$ 245
(b) Rent of Tracks and Facilities		5	7	14	10	6	3	22	11	3
(c) Rent of Equipment			147	243	199	170	12	28	12	11
(d) Rent of Buildings and Other Property				33	40	164	230	83	137	95
(e) Power	3,763			5,466	4,148	3,446	3,350	1,346	3,224	1,1
(f) Miscellaneous										737
Total—	\$ 4,038	\$ 497	\$ 3,487	\$ 6,326	\$ 4,958	\$ 4,099	\$ 3,688	\$ 1,763	\$ 3,604	\$ 1,007
Total Operating Revenue	\$83,880	\$55,814	\$91,845	\$95,904	\$94,614	\$95,224	\$93,459	\$92,559	\$88,469	\$78,392
Operating Ratio	70.76	74.45	63.72	62.25	60.96	68.47	74.19	78.66	88.94	103.41

TABLE 53—COMPARISON OF DAILY GROSS EARNINGS

Days	1914	1915	Increase	Decrease
Monday	\$ 4,767	\$ 4,544	\$...	\$ 223
Tuesday	4,032	4,383	351	...
Wednesday	4,304	4,374	70	...
Thursday	4,733	4,767	34	...
Friday	3,947	4,262	315	...
First five days of week..	\$21,783	\$22,330	\$547	...
Saturday	5,285	5,638	353	...
Sunday	8,847	8,409	... \$438	
Entire period	\$35,915	\$36,377	\$462	...

The unsatisfactory experience of 1915 was a primary factor with the managers in proposing an increase in fares in 1918. If the fare were raised 1 cent in each zone, the management was apprehensive of a decrease in the number of car riders with a probable decrease in revenue. The increase, furthermore, was especially unfair to the passengers who rode only a short distance in one zone. There was, in addition, the difficulty that the Public Service Commission of the state might object to any increase.

The public was interested more in the fares it paid than in the welfare of the company. On the other hand, the executives believed passengers should pay for the cost of operations of the road. This they had not been doing since 1914. Without trial, the company was unable to calculate the effect of an increase in fares on the number of passengers carried. The increase of 1 cent did not preclude the possibility of at least a small increase in revenue. The management decided, therefore, to petition the Public Service Commission for an increase of 1 cent in each zone. This was allowed by the Public Service Commission and went into effect on June 15, 1918.

After a few months it became apparent that not only was there no increase in the previous revenue, but there was an actual decrease compared with a similar period of the preceding year.

This was not entirely due to the change in fare, however, but could be attributed in part to the increased number of automobiles. The experience in June that a raise of 1 cent in the fare had no favorable effects seemed to indicate that another similar raise would not extricate the company from its financial difficulties. As possible remedies, the company might petition the Public Service Commission for an increase of at least 4 cents in each

TABLE 54—PASSENGER FARE REVENUES, 1910-1918

Month	1910	1911	1912	1913	1914	1915	1916	1917	1918
January.....	\$ 4,896	\$ 5,618	\$ 5,276	\$ 5,086	\$ 5,467	\$ 5,714	\$ 6,178	\$ 6,118	\$ 5,619
February.....	4,643	4,972	5,274	5,311	5,046	5,058	5,734	5,020	5,197
March.....	5,588	5,675	5,901	6,372	5,796	5,659	6,197	5,933	5,875
April.....	6,114	6,354	6,253	6,326	6,174	6,027	6,613	6,295	5,540
May.....	7,449	8,684	7,637	7,980	9,079	7,700	7,796	6,653	6,759
June.....	7,711	8,401	8,635	9,412	8,993	7,504*	7,644	7,621	8,126
July.....	10,991	11,051	9,338	10,016	9,972	9,526	9,260	9,885	8,570*
August.....	9,905	9,428	8,992	10,712	10,032	9,136	9,644	9,477	8,426
September.....	8,294	8,910	8,475	8,417	8,702	8,870	8,603	8,054	6,970
October.....	7,617	7,687	8,141	7,120	8,195	8,234	8,061	7,145	5,326
November.....	5,918	6,296	6,398	6,585	6,496	6,509	6,288	5,680	5,196
December.....	5,716	6,163	6,302	6,050	5,916	6,152	6,664	5,718	

*Fare changed at this date.

zone, resulting in three 10-cent fares and in one 11-cent fare, or it might petition for permission to cease operation. The management did not desire to allow the company to follow the latter procedure and admit its failure if any other solution was possible. Whether to petition for a 4-cent increase in fare depended upon what effect such an increase would have on the number of passengers carried by the road. If the raise in fare caused the number of passengers to decrease to such an extent that the gross revenues were not increased materially, no profit was obtained. There was also the question of whether the Public Service Commission would allow so large an increase, and also whether it might not be wise for the company to ask for a larger increase in the expectation of reaching the compromise of 4 cents.

Should the company have petitioned the Public Service Commission for a 4-cent increase in fare?

If not, should the company have petitioned the Public Service Commission for permission to conclude its operations?

40. OLD COLONY GAS COMPANY—CHANGE IN RATE SCHEDULE

The Old Colony Gas Company was incorporated in 1911 in Massachusetts, to generate and distribute gas for heating and cooking purposes. It was not the intention of the organizers of the company to devote their efforts to the sale of gas for illuminating purposes inasmuch as they were of the opinion that electricity served better for that purpose. The plant, which consisted of water gas-generating apparatus and storage tanks having a capacity of 1,000,000 cubic feet per day, was completed in December, 1911, and commenced operations in January, 1912. Common stock amounting to \$354,500 in shares of \$100 par value and a like amount of 5% preferred stock was authorized and sold. In addition, a \$338,000 issue of first mortgage 5% bonds, dated December 1, 1911, and due December 1, 1931, was sold.

The plant of the Old Colony Gas Company was located in Braintree, a suburban town of 10,580 inhabitants. The company also was to serve the five neighboring towns of Weymouth, Hingham, Rockland, Abington, and Whitman. These towns had 15,057, 5,604, 7,544, 5,787, and 7,147 inhabitants, respectively, in 1920. There were no competing gas companies in the districts served by the company. Since the community was popular as a

summer resort, the consumers to be served in the summer-time were more numerous than in the winter. An important seasonal problem was presented to the management, therefore, and they expected that it would be necessary to make most of the profits during the summer.

Whitman, 15 miles from Braintree, was the most distant town served by the company. It was customary for gas companies to operate on the low-pressure system, but in this instance the distance was so great that the expense of pumping the gas under low pressure would be too high. Consequently, a high-pressure system was installed for the entire distribution of the company. The mains of a high-pressure system varied from $1\frac{1}{2}$ to 8 inches in diameter, in contrast to 14 inches or more in low-pressure mains; hence the friction was less. It was necessary, however, to install a transforming apparatus at each home served in order to reduce the pressure to the satisfactory jet pressure. If the company had not been required to transport its gas a great distance, the distribution expenses of a low-pressure system would have been less than for a high-pressure system. A greater investment was required for the latter, with the result that the proportion of constant expenses to varying expenses was higher than for a low-pressure system.

From 1912 to 1916, the Old Colony Gas Company increased the number of its customers and was able to meet all expenses of operation and fixed charges. The amount charged off to depreciation, however, was insufficient. Preferred dividends were paid, and a small balance was carried to surplus in each of these years. The company had borrowed about \$400,000 from banks at the beginning of its operations, but had reduced these debts to \$200,000 by 1916. In 1917, however, the company found it increasingly difficult to make satisfactory profits. In June of that year, the executives estimated that if expenses could not be reduced or the consumer rates increased, the company would be unable to meet its fixed charges during the next fiscal year. The fiscal year ended on June 30. The cost of supplies, such as coal and oil, had begun to advance rapidly. There appeared to be no way of reducing expenses and there was every evidence that the cost of supplies would continue to advance. The executives decided, therefore, to increase the rates charged to consumers, beginning with July 1. It was not necessary to obtain permission to change rates from the

Public Utilities Commission of the state in which the company operated. The rate had been established in 1912 without the advice or permission of that body and the laws of the state required that a public utility need not obtain permission of the Public Utilities Commission for a change in rates if the existing rate had not been established by the latter. The Old Colony Gas Company, therefore, was fortunate, in that it could increase its rates promptly without waiting for investigation by the state Public Utilities Commission. Since 1912, the rate had been \$1.35 per 1,000 cubic feet to all household consumers, with a discount of 10 cents per 1,000 cubic feet to consumers who paid cash within 15 days. The net rate, therefore, had been \$1.25 per 1,000 cubic feet. On July 1, the rate was increased to \$1.50 per 1,000 cubic feet, subject to the same 10-cent discount. The lower rates quoted to industrial users were increased by a corresponding amount. The number of industrial consumers in the community, however, was relatively unimportant since 85% of the gas produced by the Old Colony Gas Company was used by household consumers, and only 15% by commercial users.

The cost of supplies continued to advance rapidly. A small deficit was shown after the payment of interest charges and preferred dividends for the quarter of October, 1917, and no further payment of preferred dividends was made after that date. On March 1, 1918, the executives increased the rate to \$1.70 per 1,000 cubic feet, or \$1.60 net. On August 1, the rates again were increased to \$1.90 per 1,000 cubic feet, or \$1.80 net.

For the year ending June 30, 1919, a balance of \$3,000 was carried to surplus. No preferred dividends had been paid during the year, however. The amount charged off to depreciation was again insufficient to cover the actual depreciation. If an adequate amount had been charged off, a deficit would have been shown in all of the years from 1912 to 1919. On the first of July, 1919, \$246,000 par value of 6% debenture coupon notes were issued, to mature July 1, 1924. This issue was necessary to pay off bank loans that had been incurred as the result of the increased amount of working capital needed as the result of the change in price level.

On April 1, 1920, the rate to domestic consumers was increased again to \$2.10 per 1,000 cubic feet, or \$2 net. Up to this time the growth in the number of customers had been continuous, and

TABLE 55—OLD COLONY GAS COMPANY—EXPENSES AND INCOME
YEARS ENDING DECEMBER 31

	1923	1922
Total Gas:		
Operating Revenue.....	\$325,743	\$285,482
Other Revenue*.....	12,722	10,674
Net Production Expenses.....	105,392	91,115
Transportation and Distribution Expenses.....	13,173	11,148
Utilization Expenses†.....	4,724	2,780
Commercial Expenses.....	17,213	15,355
New Business Expenses.....	13,021	12,382
Miscellaneous and Administration Expenses.....	18,411	16,627
Total.....	171,934	149,407
Interest.....	32,312	33,000
Bond Discount, Amortization.....	1,500	2,275
Taxes.....	31,561	28,927
Depreciation.....	51,111	50,491
Dividends.....	28,360	28,360

*Composed mostly of jobbing profit.

†Town and street lamps.

no decrease had been apparent as the result of the several advances in rates.

For the year ending June 30, 1920, income from operations just covered fixed charges. The amount charged off to depreciation, however, was two and one-half times the amount charged off in 1919. The actual results of the year's operations, therefore, were better than for the preceding year. On September 1, 1920, the executives again proposed an increase in rates. The rates charged already were so high, however, that the executives hesitated to take this step because of the possibility of a decrease in the number of consumers or in the amount of gas used. In order to meet this contingency, a change in the method of quoting rates was designed. There were many customers who used such a small quantity of gas during the year that the fixed capital charges attributable to them were not met by the gross revenue from such sales. It was estimated that if a customer purchased only 100 cubic feet of gas a month, the actual cost to the company was \$1.10. Purchases in addition to this amount cost the company less. It was decided, therefore, to charge \$1.10 for the first 100 cubic feet or less used each month and 20 cents for each additional 100 cubic feet. A minimum charge of \$7 per year was made to all customers whether they used that amount of gas or not. In order to make this advance less onerous, the former 10-cent dis-

TABLE 55 (Continued)—OLD COLONY GAS COMPANY—EXPENSES AND INCOME, YEARS ENDING DECEMBER 31

	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912
Total Gas:										
Operating Revenue.....	\$267,303	\$202,974	\$178,046	\$143,633	\$108,796	\$93,761	\$79,998	\$68,970	\$49,773	\$9,023
Other Revenue*.....	4,772	3,706	4,619	961	4,156	5,302	2,999	6,144	6,361	2,450
Net Production Expenses.....	116,361	75,697	73,856	52,903	28,196	23,380	22,240	24,967	17,941	4,985
Transportation, Distribution, and Utilization Expenses.....	19,934	16,581	17,764	16,719	14,367	11,296	10,599	7,711	4,169	328
Taxes.....	24,563	18,525	12,507	12,526	11,387	11,008	6,896	3,691	550	0
Commercial, New Business, and Administration Expenses.....	28,363	23,673	23,720	24,984	9,837	8,522	6,510	6,755	8,252	1,223
Miscellaneous Expenses.....	3,347	2,194	3,093	3,551	3,409	2,574	1,709	2,690	2,471	223
Total.....	191,668	136,670	130,940	110,653	67,196	56,780	47,864	45,814	33,383	6,759
Interest.....	36,606	37,011	36,527	32,061	25,791	22,571	15,328	14,802	9,828	0
Depreciation.....	40,866	32,000	12,201	2,973	3,492	1,500	1,504	1,329	269	46
Dividends.....	.....	.....	.....	4,431	1,775	17,725	9,962	4,100	0	0

* Composed mostly of jobbing profit.

TABLE 56—RATES CHARGED HOUSEHOLD CONSUMERS

January, 1912—July, 1917—	\$1.35 gross, \$1.25 net per 1,000 cubic feet (10 cents discount cash 15 days)
July	1, 1917—\$1.50 gross, \$1.40 net per 1,000 cubic feet
March	1, 1918—1.70 gross, 1.60 net per 1,000 cubic feet
August	1, 1918—1.90 gross, 1.80 net per 1,000 cubic feet
April	1, 1920—2.10 gross, 2.00 net per 1,000 cubic feet
September 1, 1920—	1.10 per month for first 100 cubic feet used. Each additional 100 cubic feet 20 cents. 10% discount for payment cash 15 days.
January 1, 1922—	Each additional 100 cubic feet after first 100 cubic feet, 19 cents.

count for cash payment within 15 days was changed to a 10% discount of the month's charges for cash payments within 15 days.

For the year ending June 30, 1921, about \$3,000 remained after provision for depreciation and fixed charges. The price of supplies had begun to decline and the executives were of the opinion that, if the existing rates were maintained, a satisfactory profit would be shown for the ensuing 12 months. For the 6 months ending December 31, 1921, a balance of nearly \$16,000 was carried to surplus. No dividends were paid during the year. The number of consumers at the end of 1921, however, was almost the same as on June 30, 1920. The possibility suggested itself to the executives that the last increase in rates had checked the growth of the company. They considered it desirable, therefore, inasmuch as profits were being shown, to reduce the rates. The initial rate for the first 100 cubic feet for the month remained the same, but the rate for each additional 100 cubic feet was reduced to 19 cents.

The amount charged off to depreciation, during the year ending December 31, 1922, was adequate to cover the actual depreciation incurred during that period and was 60% greater than that charged off during 1920. The improvement in the company's financial affairs, therefore, was substantial. Preferred stock dividends of 3% were paid in 1922 and a dividend of 5% was declared out of earnings of 1922, payable in 1923.

In 1923, the profits of the company continued to be satisfactory, and two quarterly payments of dividends on the common stock, in addition to regular preferred dividends, were declared, for the first time in the company's history. Bank loans which had been

TABLE 57—OLD COLONY GAS COMPANY—NUMBER OF CUSTOMERS' METERS
AS OF DECEMBER 31

Town	AS OF JUNE 30									
	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932
Braintree.....	1,896	1,774	1,590	1,589	1,537	1,352	1,268	1,163	1,005	863
Weymouth.....	2,382	2,178	1,994	1,853	1,741	1,668	1,454	1,273	1,047	825
Hingham.....	541	486	451	431	399	367	292	247	157	4
Rockland.....	919	850	836	786	748	698	648	605	566	474
Abington.....	526	442	437	433	404	394	388	352	337	252
Whitman.....	920	890	855	846	795	777	756	679	610	574
Total.....	7,244	6,679	6,167	6,151	5,806	5,411	5,145	4,588	4,077	3,513
										2,698
										1,200

TABLE 58—TOTAL NUMBER OF METERED CUBIC FEET MANUFACTURED
(In thousands of cubic feet)

Month	1923			1924			1925			Years Ending June 30, 1912—
	1923	1924	1925	1923	1924	1925	1923	1924	1925	
January.....	12,836	9,688	8,806	12,321	9,696	8,806	13,861	12,321	10,437	8,592
February.....	12,321	9,696	8,806	12,636	9,978	9,978	12,636	12,636	11,889	9,5357
March.....	14,133	11,889	12,993	14,681	12,993	12,993	14,432	14,432	13,327	1914—61,281
April.....	15,972	14,432	15,100	16,252	15,437	15,437	16,252	16,252	15,780	1915—67,871
May.....	14,795	15,977	15,977	14,795	12,398	12,398	14,795	14,795	11,379	1916—78,629
June.....	13,533	9,356	9,356	13,595	12,459	12,459	13,533	13,533	9,863	1917—95,304
July.....	13,595	9,863	9,863							1918—14,925
August.....										1919—114,648
September.....										1920—123,831
October.....										1921—130,344
November.....										
December.....										
Total.....	171,043	147,949	147,949							

incurred during the years 1919 to 1921 were paid off, and the company had no indebtedness beyond the issues of first mortgage 5% bonds due in 1931, and the 6% debenture bonds due in July, 1924. After the payment of interest charges, depreciation, and dividends on the preferred and common stocks, a balance was carried to surplus amounting to \$21,000 for the year ending December 31, 1923.

In January, 1924, the executives discussed the advisability of again reducing the rates. The profits for the year 1923 had been substantial, and a normal increase in the number of customers served and the amount of gas sold had been shown. The company's financial position was strong. It would be necessary in July, 1924, to refund the issue of debenture bonds which then would become due, but the executives anticipated no difficulty on this score. A reduction at this time might increase the amount of gas used and enable the company to secure additional customers. The executives estimated that the company served only 70% of the potential consumers in the districts where the company already had its mains. The capacity of the plant was adequate, without further expansion, to serve a larger number of customers. Any increase in the number of customers in the same territory, therefore, would result in a decrease in the unit cost per customer served. There was the possibility, however, that the price of supplies might increase during 1924 as the result of a general boom in business. In view of this, it was suggested that the best policy might be to maintain the rates or even to increase them in anticipation of the increase in costs. It had been the experience of this public utility, in common with most others, that profits were small or even non-existent during the prosperity period of the business cycle, because an increase in rates always lagged behind increases in costs. Satisfactory profits usually were shown during depressions or business recoveries for like reasons.

Tables 55, 57, and 58 show the financial results of each of the years of operation, from 1912 through 1923, together with the number of customers and the amount of gas sold in each year.

Approximately, what rates should have been established by the Old Colony Gas Company in January, 1924?

PROBLEMS IN BUSINESS ECONOMICS

PART III

MEASUREMENT OF THE BUSINESS CYCLE

XI

COMPARISON OF AN INDIVIDUAL CONCERN WITH THE HARVARD INDEX OF GENERAL BUSINESS¹

A. CORRECTION FOR SEASONAL VARIATION

I. INTRODUCTION

For the years since the war—and the majority of the comparisons attempted by individual business concerns will pertain to the post-war period—secular trend is relatively unimportant. Furthermore, in the rare cases where trend is considerable, its presence is not so serious an obstacle to the comparison with the Harvard Index as is the existence of a seasonal movement in the individual business series. We shall therefore make no attempt in this section of the chapter to cover the problem of correcting for trend, but section B describes the method of correcting for trend, to be used in the exceptional cases where such correction is possible.

In numerous individual businesses, on the other hand, the seasonal swing is quite pronounced; and a satisfactory comparison with general business conditions is possible in those instances only after the figures are corrected for seasonal variation. The object of this section is to set forth in detail the method of correcting an individual business series for seasonal variation. It is expected that this discussion will meet the needs of a large number of business men who have had difficulty in comparing the uncorrected figures for their businesses with the Harvard Index.

Section B of this chapter completes the instructions for the relatively few business men whose data are sufficiently extensive to warrant correction for trend as well as for seasonal variation.

II. STATISTICAL DATA

In making a comparison between the fluctuations in a par-

¹ This chapter reproduces, with minor editorial changes, the pamphlet of instructions for subscribers of the Harvard Economic Service, which was prepared by Professor W. L. Crum, the statistician of the Harvard University Committee on Economic Research.

ticular business concern and the Index of General Business, it is desirable to examine several phases of the individual business, as reflected by different series of statistical data. For instance, separate analyses may be made of production, stocks, shipments, orders entered, sales billed, prices of materials, pay-roll, gross income, net earnings. In fact, any statistical series which pertains to the business and for which a continuous monthly record extending over several years is available may yield interesting and useful results upon analysis.

The fluctuations in some of the special series are however likely to be much more complex than in others. One series can generally be selected as giving the best single picture of the progress and condition of a particular business. It is understood, of course, that this most representative series may consist of one record of figures in one business and be based upon an entirely different phase of the records of another business: one business may find sales billed best, and another may select orders entered.

In the illustrations used in this chapter sales billed are selected as the representative series for each illustrative business organization. The chief reasons for this selection are that sales billed seem to be the figures most commonly available on a monthly basis for those who wish to make comparative studies. In some cases another series may be preferable. The *methods* discussed herein apply to any series quite as readily as to the sales billed series actually used for illustration. Moreover, these methods are applicable to any business irrespective of size: they are equally useful for the department store in a small city and for the large manufacturing corporation operating a score of plants.

Two parallel illustrations are used throughout this discussion: the sales billed of Company M and of Company N. Company M presents the case of an industrial producer having annual sales of about $1\frac{3}{4}$ millions of dollars; and it may be regarded as fairly typical (in the form of its fluctuations) of individual manufacturing concerns, whereas Company N presents the case of a distributor having annual sales of about one million dollars, and the problems involved in its analysis may likewise be regarded as typical for distributing organizations. But neither Company M nor Company N is a real business organization. Both are fictitious: the two series used are composites

constructed solely for purposes of illustration, but the difficulties involved in their analysis are typical.

TABLE 1M—SALES OF COMPANY M, IN HUNDREDS OF DOLLARS

Month	1919	1920	1921	1922	1923	1924
January.....	1691	2232	1303	1182	1741	1718
February.....	1284	1939	1108	1223	1592	...
March.....	1333	2233	1076	1416	1786	...
April.....	1371	2052	988	960	1666	...
May.....	1485	2099	1057	1103	1746	...
June.....	1516	2275	1063	1165	1640	...
July.....	1765	2242	963	1081	1537	...
August.....	1822	2182	1089	1200	1616	...
September.....	1797	2071	1109	1408	1523	...
October.....	1948	2003	1272	1585	1673	...
November.....	1444	1717	1167	1644	1546	...
December.....	1798	1539	1076	1596	1430	...

TABLE 1N—SALES OF COMPANY N, IN HUNDREDS OF DOLLARS

Month	1919	1920	1921	1922	1923	1924
January.....	601	855	563	520	683	702
February.....	585	800	548	539	660	...
March.....	658	961	639	641	831	...
April.....	683	874	594	667	790	...
May.....	722	935	587	701	817	...
June.....	710	969	592	722	804	...
July.....	788	960	574	720	757	...
August.....	840	945	626	752	799	...
September.....	839	924	620	741	800	...
October.....	897	924	700	802	902	...
November.....	868	803	629	779	838	...
December.....	1009	866	791	949	1041	...

When it has been decided which particular series of figures is to be analysed, the monthly data should be assembled from the records of the business and tabulated.¹ In the construction of

¹ Monthly figures are on several grounds most appropriate. Some useful results can indeed be obtained by analysing quarterly figures, if monthly data are not available. The necessary modifications in the procedure described herewith are fairly obvious, and will not be mentioned specifically. On the other hand, if weekly figures are available, it is doubtful if the additional trouble incident to their use is worth while: they should be converted to monthly data by com-

this original table of data, each monthly item should be entered complete and precisely as it appears in the records. Before proceeding further, the statistician should verify each item of this table against the original records with the same painstaking care which would be used in drawing up a financial statement.¹

From this original table of exact figures a working table should be compiled by rounding off the exact figures to three (or four) digits. Tables 1M and 1N are such working tables. Thus, in Table 1M, the exact item for January, 1919, was \$169,123.75, that for February \$128,367.40, and that for March \$133,250.00. The figures in the working table are the *actual items*, to be used in the analysis.

III. CHART OF UNCORRECTED FIGURES

The first step in the analysis is the plotting of the actual items (uncorrected figures). This may be done on the Index Chart. Figures 1M and 1N, on the opposite page, are reproductions of such plots of series M and N on the post-war section of the Index Chart.² It appears from these charts that some preliminary conclusions can be reached in each of these businesses concerning the relations of conditions in the individual business with the conditions of general business. In fact, both of these business enterprises might be described as intermediate cases: in both cases the seasonal movement is only moderate and does not, therefore, entirely obscure the comparison of the cyclical movements of the individual business curve with the similar movements of curves A, B, C. There is, however, enough seasonal swing in each case to render it desirable to correct the figures. Hence both series, M and N, are intermediate between those cases in which no correction of the actual items is needed and those cases where a direct comparison of the uncorrected figures with our Index is entirely fruitless.

bining the weeks in each month (with allocation of the parts of overlapping weeks) to form monthly totals or averages.

¹ Indeed, the carrying out of a thorough check at every stage of the work is extremely important. From the formation of the original table to the construction of the final chart the process of verification must be carried on at every step. Otherwise errors are likely to creep in, to be projected through the remaining portion of the analysis, and to affect seriously—although usually in a manner difficult to detect—the final results.

² To avoid confusion, and in order better to bring out the relationship between the charts and tables in this chapter, the regular order of numbering the figures has been dispensed with.

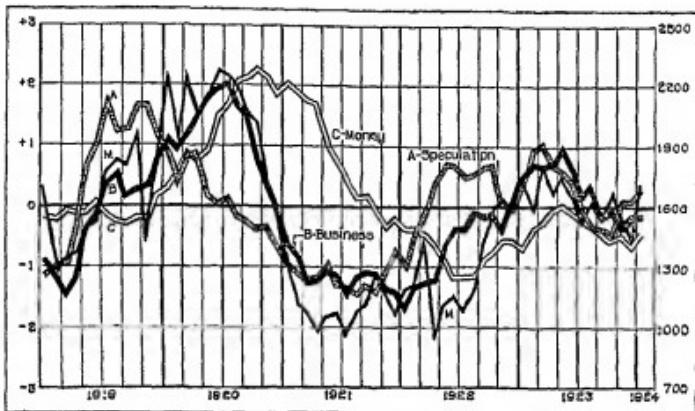


Figure 1M: Sales of Company M (actual data in hundreds of dollars) compared with the Harvard Index curves

A more satisfactory chart of actual items, for the present purpose, is one made without reference to the Index. Such curves are shown in Figures 2M and 2N, on the next page. Pains-taking precision in making a rough chart of this sort is not necessary, but the plotting should be accurate without being minutely so. Its finishing need not be done with great care: a firm pencil

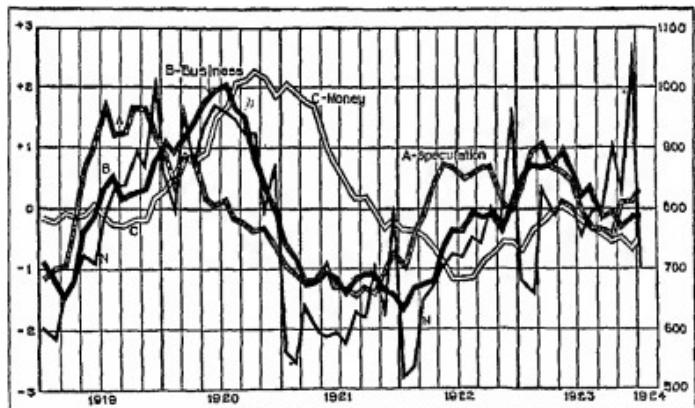


Figure 1N: Sales of Company N (actual data in hundreds of dollars) compared with the Harvard Index curves

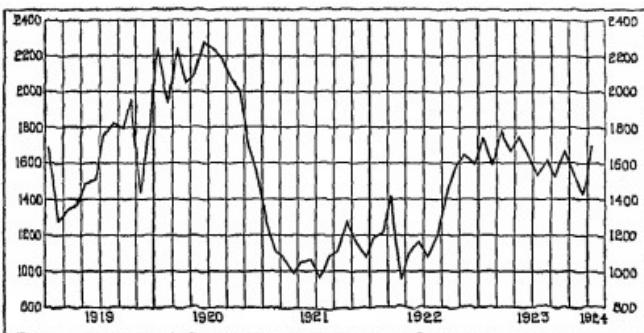


Figure 2M: Sales of Company M (actual data in hundreds of dollars)

line joining each successive pair of plotted points will be sufficient. Accurate labels of the title of the chart, the scales used, and the time interval covered are essential.

The purpose of the rough chart is to enable the investigator to form a preliminary conclusion as to the presence of seasonal variation in the series. Evidences of seasonal movement appear in both Figures 2M and 2N, but such movement is strong in neither case. In each series the movement from January to February is downward in nearly every year shown on the chart.

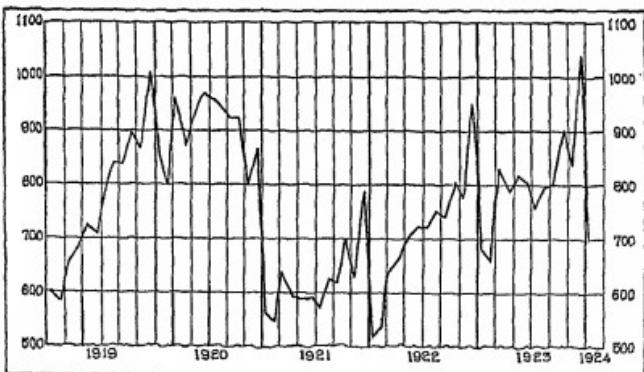


Figure 2N: Sales of Company N (actual data in hundreds of dollars)

In case N, a more pronounced manifestation of seasonal influence is the fairly regular upswing from November to December and the succeeding sharp drop into January. Examination of the movements between other pairs of months may show similar tendencies which persist in all or most of the years. It should be observed that this search for evidence of seasonal movement consists in comparing the month-to-month change in one year with the corresponding changes in the other years; it does not consist in observing whether one or other month of the year is persistently high (or low) in all or most of the years. To be significant, the month-to-month movements should appear with considerable regularity—they should be identical in direction, but of course not in amount, in all or most of the years of the chart—and their presence should be quite independent of the existence of other-than-seasonal fluctuations in the series. (They should be apparent in spite of trend, and of the cyclical swings of prosperity and depression.) It is evidence of this sort, found in the graphic examination of the actual items, which indicates that a seasonal movement exists in the series and which justifies the more thorough arithmetic analysis described below. As stated above, such evidence appears in the charts for both illustrative series, M and N.

IV. SEASONAL VARIATION

In order to determine the form and measure the amount, and indeed to confirm the existence, of the seasonal variation, it is necessary to calculate *link relatives* for the entire series. A table of link relatives is formed by dividing the January item of the first year into the February item and entering the percentage

TABLE 2M—MONTH-TO-MONTH LINK RELATIVES FOR THE SALES
OF COMPANY M
(Unit: 1%)

result in the February space of the new table, dividing the February item into the March item and entering the percentage result in the March space of the new table, and so on throughout the series.¹ No exception is made in passing from one year to the next: the December item of the one year is divided into the January item of the next, and the percentage result entered in the January space of the new table.

TABLE 2N—MONTH-TO-MONTH LINK RELATIVES FOR
THE SALES OF COMPANY N
(Unit: 1%)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
1919	..	97	112	104	106	98	111	107	100	107	97	116
1920	85	94	120	91	107	104	99	98	98	100	87	108
1921	65	97	117	93	99	101	97	109	99	113	90	126
1922	66	104	119	104	105	103	100	104	99	108	97	122
1923	72	97	126	95	103	98	94	106	100	113	93	124
1924	67	...	...	...	...	...	...	...	...	...	...	...

It is desirable that the number of link relatives in the table be a multiple of 12, in the present instances 60 (rather than 59). For this purpose one extra month is necessary in the actual data: thus in the illustrations the figures run from January, 1919, through January, 1924.²

Table 2M is such a table of link relatives derived from the data of Table 1M, and Table 2N is likewise derived from 1N.

The next step is to form a *multiple frequency table* of link relatives. Such tables, for cases M and N, are shown in Figures 3M and 3N, on pages 578 and 579. The object of the multiple frequency table is to display the link relatives in such a way as to furnish a visual impression concerning the seasonal variation. In Tables 2M and 2N the link relatives are arranged according

¹ In making this division and similar divisions in problems of this sort much time will be saved by using a slide rule. If the person who undertakes the work of analysis is not familiar with this device, he will, by spending a few hours in learning the simple steps in its use, save much time in a great variety of problems as well as in this particular case. The so-called Merchant's Rule is probably best adapted to the present needs.

² We are assuming that monthly data are available from January, 1919, on. If the record is not at least five years long it is doubtful whether a satisfactory measurement of seasonal variation can be made.

If the data run beyond January, 1924, probably no change in the above rule would be made until after January, 1925; seasonal variation would in general be based upon a whole number of years, that is a whole multiple of 12 for the number of link relatives.

to time, and those tables do not, therefore, bring out clearly the month-to-month movement which exists on the whole in all or most of the years. In Figures 3M and 3N the link relatives are arranged according to size, and that arrangement does yield a conclusion as to the month-to-month movement which exists more or less regularly in all of the years.

The manner of constructing the multiple frequency table is as follows: The horizontal rulings divide the table into rows on a percentage scale; and the vertical rulings divide it into 12 columns, one for each month. The computed link relatives are then "scored" on this blank. Thus, the first item in Table 2M is 76, and it is scored in Figure 3M by entering a stroke in row "76%" and column "Feb./Jan." In similar manner all 60 items of Table 2M are scored in Figure 3M. The resulting multiple frequency table gives a diagrammatic picture of the month-to-month seasonal movement.

The multiple frequency table should reveal the existence of the seasonal swing, suggest its form, and indicate the precision with which it can be measured. In the first place, by glancing from left to right across the table—Figure 3M or Figure 3N—one gets a general impression of the seasonal variation: the fact that the eye must rise (or dip) in passing from one monthly column to the next, successively from left to right, reveals the *inter-column displacement* and gives a first impression as to the existence and intensity of the seasonal swing. A more careful examination consists in regarding the chart from two points of view: the closeness of the clustering of the scores *within each* monthly column, and the extent of the displacement of the groups of scores *between pairs of adjacent* columns. (This displacement is the feature necessitating the rise and dip of the eye, mentioned above.) The first consideration bears directly upon the precision with which the seasonal movement can be measured, and the second consideration pertains especially to the extent (or intensity) of the seasonal swing. It should be remarked that a closer clustering within individual columns is needed if the intensity is only moderate than if the intensity is high, in order that the measurement of seasonal variation may be equally precise. In the illustrations, the clustering within the several columns would be designated as fairly close in Figure 3M, but quite poor in Figure 3N. On the other hand the intercolumn displace-

ments are quite considerable in both cases, but are clearly more pronounced in the case of N than in M. When both considerations, intensity of displacement and closeness of clustering, are taken together, it appears that the precision will be much greater in case N than in M. N has the closer clustering and the more intense displacement from column to column. Nevertheless, in both cases, the intercolumn displacement is sufficient to confirm

Relatives	Jan. Dec.	Feb. Jan.	Mar. Feb.	Apr. Mar.	May Apr.	June May	July June	Aug. July	Sept. Aug.	Oct. Sept.	Nov. Oct.	Dec. Nov.
Medians *	113	88	110	92	107	103	95	106	98	110	90	94
Over 120												
120												
125												
126												
127												
128												
129												
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73												
72												
71												
70												
Under 90												

*Average of three middle link relatives.

Figure 3M: Multiple frequency table for series M

a considerable seasonal swing, in spite of the fact that the clusterings within the columns are not extremely close.

Having decided, by examination of Figures 3M and 3N, that seasonal movement does exist, and having concluded that this seasonal movement can be measured with satisfactory precision, the investigator will proceed to an actual calculation of the seasonal indexes. It should, however, be remarked at this point

Relatives	Jan. Dec.	Feb. Jan.	Mar. Feb.	Apr. Mar.	May Apr.	June May	July June	Aug. July	Sept. Aug.	Oct. Sept.	Nov. Oct.	Dec. Nov.
Medians *	68	97	119	97	105	101	99	106	99	109	93	121
Over .100												
100												
109												
108												
107												
106												
105												
104												
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73												
72												
71												
70												
Under .90												

*Average of three middle link relatives.

Figure 3N: Multiple frequency table for series N

TABLE 3M—SEASONAL INDEXES FOR SERIES M

Month	I Median	II Log Median	III Corrected Log	IV Cumulative Corrected Log	V Antilog	VI Index
January.....	1.13	0.0531	0.0524	0.0524	1.128	105
February.....	.88	9.9445-10	9.9439-10	9.9963-10	.992	93
March.....	1.10	0.0414	0.0407	0.0370	1.089	102
April.....	.92	9.9638-10	9.9632-10	0.0002	1.001	93
May.....	1.07	0.0294	0.0287	0.0289	1.069	100
June.....	1.03	0.0128	0.0122	0.0411	1.099	103
July.....	.95	9.9777-10	9.9770-10	0.0181	1.043	97
August.....	1.06	0.0253	0.0247	0.0428	1.104	103
September.....	.98	9.9912-10	9.9905-10	0.0333	1.080	101
October.....	1.10	0.0414	0.0408	0.0741	1.186	111
November.....	.90	9.9542-10	9.9535-10	0.0276	1.066	100
December.....	.94	9.9731-10	9.9725-10	0.0001	1.000	93
Total.....	....	60.0079-60	....	....	12.857	...
Average.....	....	.00066	....	....	1.071	..

that, if the chart (multiple frequency table) of the link relatives does not confirm the existence of seasonal movement or if it indicates that such seasonal variation as does exist cannot be determined with fair precision (this would be indicated by a poorer clustering than that of Figure 3M with no greater displacement, or by a smaller displacement without closer clustering: thus Figure 3M may be regarded as approximately a borderline case), then there is no justification in proceeding to the calculation of "seasonal" indexes. Although the formal arithmetical operations described below would undoubtedly, even in such cases, yield certain numerical results, the apparent significance of such numbers might be quite misleading.

The three middle link relatives of each column of the multiple frequency table are averaged to get the medians.¹ Thus, in the Jan./Dec. column of Figure 3M, the three middle items are 109, 110, 120, and their average is 113. This number is taken as the most representative figure for the seasonal movement December-to-January for series M. Likewise, for Feb./Jan., the average

¹ These are not strictly "medians" according to the precise statistical definition; but, in a short series where there are only five (or even six or seven) link relatives in each column, the true median (the middle item if the number of items is odd, the average of the two middle items if the number of items is even) is not so reliable as in a series covering many years. Therefore in a series of five or seven years, the average of the middle three links should be taken; and, in a series of six or eight years, the average of the middle four. Even for a longer series, it is often desirable to take the average of the middle four or five items as the "median."

TABLE 3N—SEASONAL INDEXES FOR SERIES N

Month	I Median	II Log Median	III Corrected Log	IV Cumulative Corrected Log	V Antilog	VI Index
January.....	.68	9.8325-10	9.8315-10	9.8315-10	.678	85
February.....	.97	9.9868-10	9.9858-10	9.8173-10	.657	82
March.....	1.19	0.0756	0.0745	9.8918-10	.779	97
April.....	.97	9.9868-10	9.9858-10	9.8776-10	.754	94
May.....	1.05	0.0212	0.0202	9.8978-10	.790	99
June.....	1.01	0.0043	0.0032	9.9010-10	.796	99
July.....	.99	9.9956-10	9.9946-10	9.8956-10	.786	98
August.....	1.06	0.0253	0.0243	9.9199-10	.832	104
September.....	.99	9.9956-10	9.9945-10	9.9144-10	.821	102
October.....	1.09	0.0374	0.0364	9.9508-10	.893	111
November.....	.93	9.9685-10	9.9675-10	9.9183-10	.829	103
December.....	1.21	0.0828	0.0817	0.0000	1.000	125
Total.....	....	60.0124-60	....	....	9.615	...
Average.....	....	.00103	....	....	.801	...

of 85, 87, 91 is 88; and so on for the other months. In this manner twelve *median-link-relatives* are obtained, and these numbers give an excellent picture of the seasonal movement. For purposes of further analysis of the series—actually *correcting* the original items for seasonal variation—they are, however, not appropriate. It is necessary to derive from these medians the *indexes of seasonal variation* which will express the seasonal influence of each month as a percentage of the average for the year, and which can therefore be used to correct the series of original items.

This is accomplished by the arithmetical operations shown in Table 3 (M or N).¹ The medians are converted from a percentage to a decimal form—113 becomes 1.13—and entered in column I. In column II is entered the logarithm of each number in column I. If there were no other causes of fluctuations in the original figures than the seasonal variation, and if the median-link-relatives were perfect measures of the seasonal movement, the total of column II should be 0.0000. In actual cases this situation will almost never be found. In case M the total is 60.0079—60 which is .0079. In case N it is 60.0124—60 which is .0124.²

¹ See "Supplementary Note," page 590, for a method which avoids logarithms.

² The "—60" in these two cases arises from totalling the negative portion of the "characteristics" of the several logarithms in column II. In both illustrations there happen to be six such logarithms with negative characteristics of —10

TABLE 4M—SALES OF COMPANY M, CORRECTED FOR
SEASONAL VARIATION
(Unit: \$100)

Month	1919	1920	1921	1922	1923	1924
January.....	1611	2128	1242	1126	1660	1636
February.....	1380	2085	1191	1315	1712	....
March.....	1307	2189	1055	1388	1751	....
April.....	1474	2206	1062	1032	1791	....
May.....	1485	2099	1057	1103	1746	....
June.....	1471	2209	1031	1131	1592	....
July.....	1820	2311	993	1115	1586	....
August.....	1770	2120	1057	1166	1570	....
September.....	1779	2051	1098	1393	1508	....
October.....	1755	1804	1146	1428	1507	....
November.....	1444	1717	1167	1644	1546	....
December.....	1934	1654	1157	1717	1539	....

This total is divided by 12, and the result deducted from each item of column II to get the corresponding item of column III. Column IV is then derived as follows: the January item is the same as that for column III, the February item is the January item of IV plus the February item of III, the March item is the February item of IV plus the March item of III, and so on, and finally the December item is the November item of IV plus the December item of III. If the "correction" made in deriving column III is appropriate and if the other arithmetical operations are accurate, this December item of column IV should be .0000, or almost exactly so (an error of a few—even five—units in the fourth decimal place is possible, thus for instance .0004

each, but there is nothing inherent in the nature of the problem which renders it inevitable that there shall be six such logarithms in every case. The essential point to observe is that every median in column I which is less than unity will have a logarithm with a characteristic of the form ".9. —10," and consequently there will be a "minus" portion of the total of column II. Now, this minus portion is just as important a part of the total as the plus portion; and in some cases it may numerically exceed the plus portion. Thus, for instance, if the total for case M had read 59.0079—60, that total would have a net negative value of —.0021. Such a case would scarcely arise in practice, but it is entirely likely that such totals as 59.7562—60 or 49.8138—50 may be found; and the actual total in these cases would be expressed in the forms —.438 and —.1862. The further treatment of such negative cases is along lines exactly parallel to those presented in the text for the positive case of series M and N, except that, where $1/12$ of the total of column II is deducted from each item of column II to get the items of column III in the positive case, $1/12$ of the numerical value of the total of column II is added to each item of column II to get the items of column III in the negative case.

TABLE 4N—SALES OF COMPANY N, CORRECTED FOR
SEASONAL VARIATION
(Unit: \$100)

Month	1919	1920	1921	1922	1923	1924
January.....	707	1005	662	612	803	826
February.....	714	976	668	658	805	...
March.....	678	990	658	661	856	...
April.....	726	930	632	709	840	...
May.....	729	944	593	708	825	...
June.....	717	979	598	729	812	...
July.....	804	979	586	735	772	...
August.....	808	909	602	723	768	...
September.....	823	906	608	727	784	...
October.....	808	833	631	723	813	...
November.....	843	780	611	757	814	...
December.....	808	693	633	759	833	...

or .9997); and this should be regarded as a partial check on the computations already made in columns II to IV of Table 3.

Column V consists of the numbers whose logarithms are the items of column IV, as determined from the logarithm tables. The figures in column V constitute an index of seasonal variation, but the objection to them is that they are on the base December = 100%. One final operation is necessary: the average of column V is obtained—1.071 in case M—and this average is divided into each item of column V. The results, thrown into percentage form, are entered in column VI; and they are the final indexes of seasonal variation which were desired.¹

¹ It should be remarked that these indexes should not be carried to more decimal places than the original medians: thus, actual division of 1.128 by 1.071 yields 105.2%, but there is no warrant for presenting the index beyond the units per cent place. The reason for this lies partly in the fact that the medians ran only to whole units of per cent rather than to tenths of per cent: thus, 113 instead of 113.2 (for instance). It should not, however, be inferred from this that by computing the medians to tenths of per cent one can properly refine the seasonal indexes to tenths of per cent. On the contrary, it is exceedingly doubtful if there is any series of only five or six years in length in which the seasonal movement is so precisely determinable that it can properly be carried to tenths of a per cent. The chances are quite the other way in a short series, and it is highly possible in many cases that the seasonal indexes should only be given to the nearest even per cent (rounding off all odd percentages), and there are even instances in which they should be given only to the nearest multiple of five. In the intermediate steps of the computation of Table 3 the operations are carried to a slightly greater degree of accuracy than it is expected to have in the final result, but this should not be allowed to alter the basic considerations mentioned above.

V. ELIMINATING SEASONAL VARIATION

The seasonal indexes are used to "correct" the original items, so that the resulting figures will be free from seasonal variation and will reflect only the fluctuations due to the phases of the business cycle.¹ The arithmetic devices for accomplishing this "correction" are various, but it is necessary to discuss here only the two which are chiefly useful in problems of this sort.

TABLE 5M—SALES OF COMPANY M
(*Relatives on 1919-21 average as 100%*)

Month	1919	1920	1921	1922	1923	1924
January.....	107	141	82	74	110	108
February.....	81	122	70	77	100	...
March.....	84	141	68	89	113	...
April.....	86	129	62	61	105	...
May.....	94	132	67	70	110	...
June.....	96	144	67	73	103	...
July.....	111	141	61	68	97	...
August.....	115	137	69	76	102	...
September.....	113	131	70	89	96	...
October.....	123	126	80	100	105	...
November.....	91	108	74	104	97	...
December.....	113	97	68	101	90	...

One process consists in the direct division of the actual items (Table 1) by the seasonal indexes (last column, Table 3) to yield the corrected figures (Table 4, M and N). Thus, the figure in Table 4M for January, 1919, namely 1611, is obtained by dividing the actual item 1691, given for January, 1919, in Table 1M, by the January seasonal index, 105% (which is 1.05).

¹ It should be recalled here that we have assumed that the series under investigation, covering only a few years, has no secular trend, or that such trend as may actually exist is not determinable by methods at present available and must therefore be ignored until more time has elapsed and data covering a longer interval of years are at hand. There are, indeed, a few exceptional cases of series covering only a few years, in which an indirect correction for trend can be made, by special devices. Section B, page 592, handles the problem of correcting for trend in series extending over longer intervals of years, but it is not possible to discuss any of the special devices. We are confident that, in nearly all cases of series extending from 1919 to date, or for a short future time, the present plan of neglecting trend will yield results which will be sufficient for most purposes.

We recall also that it is assumed that the so-called irregular fluctuations cannot ordinarily be separated from the cyclical fluctuations; and, when we speak of cyclical fluctuations, it is understood that the irregular variations are included.

in decimals). Likewise, 1380 for February, 1919, is the ratio of the original 1284 to the seasonal index .93. In this manner all the figures ("original items corrected for seasonal variation") of Table 4 are derived. These figures are expressed in the same units as the original data (\$100 in the illustrations).

TABLE 5N—SALES OF COMPANY N
(*Relatives on 1919-21 average as 100%*)

Month	1919	1920	1921	1922	1923	1924
January.....	79	112	74	68	90	92
February.....	77	105	72	71	86	...
March.....	86	126	84	84	109	...
April.....	90	115	78	87	104	...
May.....	95	123	77	92	107	...
June.....	93	127	78	95	105	...
July.....	103	126	75	94	99	...
August.....	110	124	82	99	105	...
September.....	110	121	81	97	105	...
October.....	118	121	92	105	118	...
November.....	114	105	82	102	110	...
December.....	132	113	104	124	136	...

The second process consists of two steps, first, converting the original items (Table 1) to *relative numbers* (Table 5, M and N), on some selected base, and, second, correcting these relative numbers for seasonal variation, to yield the *adjusted relatives* (Tables 6, M and N). The selection of the base period usually involves an exercise of judgment—apart from any direct and automatic calculations afforded by the statistics—as to what level is approximately "normal" for the period under examination and for the months of the immediate future. Ordinarily, it will be fairly safe to take the monthly average for 1919-21 as the base, and that selection is used in the illustrations. In some special cases it will, however, prove desirable to select some other interval; but strong reasons for such other selection should be quite clear, for the 1919-21 interval has been observed to be fairly normal in a large number of actual cases.

When, in applying the second process, the base has been selected (it is 1586, average for 1919-21, in case M), the items of Table 5 are obtained by dividing the actual items of Table 1 by the base number, and expressing the results as percentages.

TABLE 6M—ADJUSTED RELATIVES OF SALES OF COMPANY M
(Percentage of 1919-21 average, corrected for seasonal variation)

Month	1919	1920	1921	1922	1923	1924
January.....	102	136	77	69	105	103
February.....	88	129	77	84	107	...
March.....	82	139	66	87	111	...
April.....	93	136	69	68	112	...
May.....	94	132	67	70	110	...
June.....	93	141	64	70	100	...
July.....	114	144	64	71	100	...
August.....	112	134	66	73	99	...
September.....	112	130	69	88	95	...
October.....	112	115	69	89	94	...
November.....	91	108	74	104	97	...
December.....	120	104	75	108	97	...

Thus, for January, 1919, the item 107 of Table 5M is the ratio of the 1691 of Table 1M to the base 1586. These "relatives" of Table 5 are then corrected by subtracting from them the seasonal indexes, and adding 100 to the results. Thus, the 102 for January, 1919 (as given in Table 6M) is obtained by deducting 105 from 107 and adding 100 to the difference. In this manner all the items of Table 6 are derived and they constitute the series of "adjusted relatives" which are free from seasonal influences.

The two processes described will not yield curves which have identically the same form, for they rest upon slightly differing assumptions as to the manner in which seasonal influences affect the original series. If the cyclical and seasonal variations are not large, the differences between the resulting curves, based upon the two processes described above, will not in general be of much significance; but if the seasonal variation is heavy (if it ranges further than, say, from 90% to 110%), and if the cyclical movement is considerable, there may well be appreciable differences between the resulting curves. No general statement can be made as to which method is universally preferable, although on the whole it seems probable that the second process is usually the better. In individual cases, however, if the curve resulting from the application of the second process seems (upon examination of the chart, as in the case of Figure 1M of original

TABLE 6N—ADJUSTED RELATIVES OF SALES OF COMPANY N
(Percentage of 1919-21 average, corrected for seasonal variation)

Month	1919	1920	1921	1922	1923	1924
January.....	94	127	89	83	105	107
February.....	95	123	90	89	104	...
March.....	89	129	87	87	112	...
April.....	96	121	84	93	110	...
May.....	96	124	78	93	108	...
June.....	94	128	79	96	106	...
July.....	105	128	77	96	101	...
August.....	106	120	78	95	101	...
September.....	108	119	79	95	103	...
October.....	107	110	81	94	107	...
November.....	111	102	79	99	107	...
December.....	107	88	79	99	111	...

data) to be affected by a small seasonal movement, there is indication that it might have been better to try the first process; and in such instances it would be well to try also the first process. Usually for the purposes of comparison which are in view in analyzing a series extending over only a few years, the results of the second process will be quite satisfactory.

VI. COMPARISON OF THE CORRECTED SERIES WITH THE HARVARD INDEX

The graphic comparisons are accomplished by plotting the results obtained in Table 4 or 6 on a chart with the Harvard B curve. If the results of Table 4 are used, the corresponding curve is plotted by selecting a scale in the manner suggested in the note.¹ The results for the series used as illustrations are

¹ The selection of the vertical scale depends upon the range of fluctuation of the series being plotted by the individual organization. That series should be examined to find the highest monthly figure and the lowest monthly figure in the interval 1919 through 1922. If the difference between the high and the low thus found is divided by 4, the resulting figure may be taken as approximately the amount to use for the vertical scale per cycle unit. The scale selection for the post-war period may not be appropriate for the pre-war period, and there is no objection to selecting a different vertical scale in the pre-war period. What is desired after all is a comparison of the timing of movements, and for this purpose the pre-war and post-war scales need not be identical.

See Table A-III, p. 605, for monthly figures for the Index Chart, 1919-1923, and Monthly Statistical Survey of the *Harvard Economic Service* for subsequent months. In some cases it will prove desirable to make comparison with the volume of trade or manufacturing, indexes of which are given in Tables C-I and D-I, pp. 611 and 617, respectively.

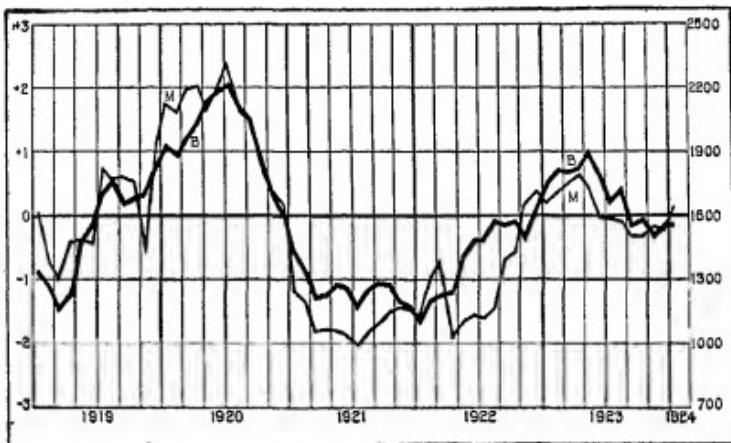


Figure 4M: Sales of Company M (original data corrected for seasonal variation and expressed in hundreds of dollars) compared with the Harvard B curve

shown in Figures 4M and 4N, on this page. If the figures in Table 6 are used (as in general they will be), the 100% line is taken to correspond with the zero line of the Harvard B curve; but the range of the scale (how many per cent shall equal one cycle unit on our B-curve scale) is decided again according

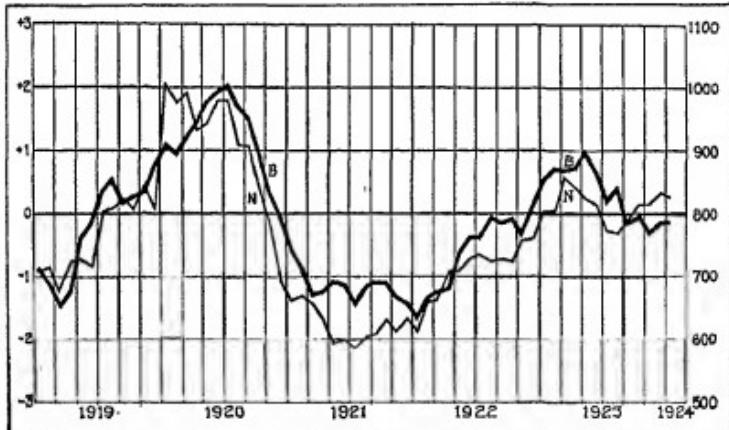


Figure 4N: Sales of Company N (original data corrected for seasonal variation and expressed in hundreds of dollars) compared with the Harvard B curve

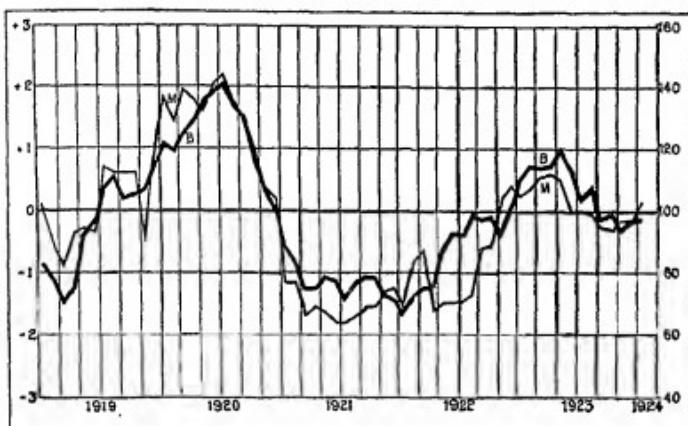


Figure 5M: Sales of Company M (percentage relatives to the 1919-1921 average as base, corrected for seasonal variation) compared with the Harvard B curve

to the rules given in the note. Figures 5M and 5N, on this page, are made in this way.

There is no occasion in making comparisons of this sort to attempt to convert the corrected figures for the individual business into so-called *cycles*. In a study extending over a long

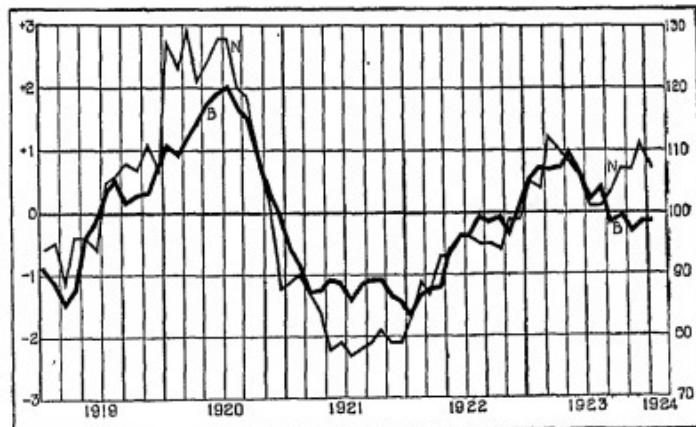


Figure 5N: Sales of Company N (percentage relatives to the 1919-1921 average as base, corrected for seasonal variation) compared with the Harvard B curve

period of years it is desirable to make this conversion on two grounds. First, the determination of cycle units by the statistical operations dependent upon the calculation of the standard deviation is a more reliable and satisfactory scheme for selecting scales for so long a series than is the scheme presented in the note. Secondly, when a long series of figures is available, correction not only for seasonal variation but also for trend is usually possible; and, when that has been done, the arithmetical methods of correlation may be used in addition to the graphical methods of comparison.¹ Those arithmetical methods of measuring correlation involve the expression of the corrected figures in cycle units. For the case of a short series such as those in view, it is not appropriate to make such an arithmetical measurement of correlation, and there is therefore in such cases no reason for converting the results to cycle units. So far as the curves are concerned (the graphical comparison) the results are precisely identical—assuming a good selection of scale—whether the adjusted relatives or cycles are used.

The conclusions drawn from a graphic comparison of the corrected series for an individual concern with the B curve should not be regarded with too great finality. Such comparison should be very helpful, but should be used with caution, in planning for the future.

SUPPLEMENTARY NOTE: DERIVATION OF SEASONAL INDEXES

The method described above, under "Seasonal Variation," on page 575, for the derivation of the seasonal indexes from the median-link-relatives, involves the use of logarithms. An alternative method is presented herewith, to show how the indexes can be obtained by using only the simple arithmetical operations of *addition, subtraction, multiplication, and division* (and entirely avoiding logarithms). The medians are entered in column I of Table 7 (M or N), and "chained" to get the items of column II. The chaining consists in entering the January median in the January space of column II, multiplying this January item of column II by the February median and entering the result in the February space of column II, multiplying the February item

¹ For discussion of these arithmetical methods of correlation and illustrations of their use, consult Professor Persons' *Indices of General Business Conditions*.

of column II by March median and entering the result in the March space of column II, and so on throughout column II. The resulting chain relative for December should be 1.00, if it were not for the imperfections of the medians as measures

TABLE 7M—SHORT-CUT CALCULATION OF SEASONAL INDEX

Month	I Median	II Chain Relatives	III Correc- tion	IV Corrected Chain Relatives	V Index	VI Index from Table 3
January.....	1.13	1.130	.001	1.129	105	105
February.....	.88	.994	.003	.991	92	93
March.....	1.10	1.094	.004	1.090	102	102
April.....	.92	1.006	.005	1.001	93	93
May.....	1.07	1.076	.007	1.069	99	100
June.....	1.03	1.108	.008	1.100	103	103
July.....	.95	1.052	.009	1.043	97	97
August.....	1.06	1.115	.011	1.104	103	103
September.....	.98	1.092	.012	1.080	101	101
October.....	1.10	1.201	.013	1.188	111	111
November.....	.90	1.081	.015	1.066	99	100
December.....	.94	1.016	.016	1.000	93	93
Average.....	....	.0013	....	1.072	...	...

TABLE 7N—SHORT-CUT CALCULATION OF SEASONAL INDEX

Month	I Median	II Chain Relatives	III Correc- tion	IV Corrected Chain Relatives	V Index	VI Index from Table 3
January.....	.68	.680	.002	.678	85	85
February.....	.97	.659	.005	.654	82	82
March.....	1.19	.784	.007	.777	97	97
April.....	.97	.760	.010	.750	94	94
May.....	1.05	.798	.012	.786	99	99
June.....	1.01	.806	.014	.792	99	99
July.....	.99	.798	.017	.781	98	98
August.....	1.06	.846	.019	.827	104	104
September.....	.99	.838	.022	.816	102	102
October.....	1.09	.914	.024	.890	112	111
November.....	.93	.850	.027	.823	103	103
December.....	1.21	1.029	.029	1.000	125	125
Average.....	....	.0024	....	.798	...	...

of the seasonal movement. Actually, this December chain relative will usually differ from 1.000; and the difference (.016 in case M) is divided by 12 and used to obtain the "correction" given in column III. Thus, the first item of column III is $1 \times .0013$ (rounded off to 3 decimal places), the second item is $2 \times .0013$, and so on, until the last item is $12 \times .0013$. These corrections, of column III, are then subtracted from the original chain relatives, of column II, to obtain the corrected chain relatives, of column IV. The average of the 12 items of column IV is then found (1.072 in case M), and the items of column V are derived by dividing the corresponding items of column IV by this average and expressing the results in percentage form. These results are the monthly seasonal indexes desired, and can be used in all respects as substitutes for the indexes found by the calculations of Table 3. The two processes are not identical, but in all ordinary cases the differences (in the present case shown by comparing columns V and VI) will be very small and can be neglected.

B. CORRECTION FOR TREND AND SEASONAL VARIATION

VII. INTRODUCTION

It has been explained in the first section of this chapter that, with almost no exception, series which do not begin earlier than 1919 cannot satisfactorily be corrected for trend. It is true that short post-war series may have a trend—a long-time tendency toward growth or decline—and that such trend may interfere somewhat in the comparison of the series with the Index curves. Only in very exceptional cases, however, will the trend be sufficient to constitute a real obstacle to effective comparisons extending over a half-dozen years. As soon as more than about a half-dozen years have elapsed since the war—as soon as the series is long enough so that the trend may become a serious obstacle to comparison with the Index curves—most of the series will by that very fact be long enough to warrant determination of trend by the method presented below.

The first section of this chapter was therefore devoted solely to a presentation of methods of correcting a post-war series for

seasonal variation. That once accomplished, the resulting corrected series can in almost all cases be compared satisfactorily with the Index curves. At most—and this only in the worst cases—the comparison would need to be made with a mental reservation as to the probable effect of the trend upon the relations revealed by the comparison.

TABLE 8—SALES OF COMPANY M, IN HUNDREDS OF DOLLARS

Month	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
January.....	332	326	384	455	569	456	526	724	607	634	763	719
February.....	296	268	320	405	485	359	394	558	523	550	717	566
March.....	346	301	356	445	544	407	489	613	581	646	762	673
April.....	322	284	333	411	530	375	454	617	585	623	716	692
May.....	327	317	355	445	525	423	473	632	594	646	706	709
June.....	352	344	401	500	575	455	520	671	667	771	809	683
July.....	338	324	397	482	565	428	551	640	634	735	763	625
August.....	336	316	400	463	564	430	509	649	623	712	671	...
September....	306	315	411	476	539	413	540	615	655	706	675	...
October.....	355	373	472	555	558	495	669	723	847	869	774	...
November....	326	336	439	505	454	455	610	611	639	777	660	...
December....	307	328	418	496	418	437	603	529	565	683	634	...

The present discussion pertains to a much longer series, in which correction for trend as well as seasonal variation can be made.

It may seem that such a longer series would be presented if figures were available beginning with a date considerably before 1919, for example 1913. From the point of view of mere length, such a series would be adequate for the determination of trend. Experience shows that the time interval which includes the war, or part of the war, is in many cases not fitted for the determination of trend. This is almost invariably true of all series expressed in dollars, such as value of sales, orders entered, and net earnings, for the reason that the far-reaching price upheavals incident to the war wrought sweeping and quite misleading changes in nearly all series expressed in dollars. Moreover, the objection may well apply to series not expressed in dollars. Even in many of these cases the war experience brought such unusual conditions, due to altered directions of our industrial effort, to temporary modifications in our distributing system, and to a variety of other circumstances, that trends based in part upon war-time figures are likely to be seriously in error. The conclusion is, therefore, that it is only in exceptional cases that in-

dividual concerns whose data extend back only as far as 1913 will be justified in fitting trends to be used in estimating current tendencies.

It is quite impossible to cover, in a general discussion such as the present, the specific problems of the occasional exceptional case. The present analysis is devoted, therefore, to the problem of a typical concern possessing monthly data for a considerable number of years before the war.

VIII. DETERMINATION OF TREND

For illustration the sales of Company M are used, figures for which are available monthly from January, 1903, to date. The analysis, in accordance with the remarks of section VII, will be confined to the pre-war years. The actual determination of trend will be based upon the eleven years 1903-13.¹

From the actual figures, a working table is compiled by the process discussed under "Statistical Data," on page 569. Table 8, on page 593, and Figure 6M, on page 597, show this series of original items as it will be used in the analysis.

The first operation is to find the monthly average in each of the 11 years: the 12 monthly items in each year are totaled, and the result divided by 12. These 11 monthly averages are then entered in column I of Table 9. In column II are introduced the *time factors*: whole numbers ranging from + 5 to - 5.²

In column III are entered the products of the individual negative time factors by the corresponding items of column I, and in column IV are entered the products of the individual positive time factors by the corresponding items of column I. Columns III and IV are then totaled; and the difference (net), with proper regard for + and - signs, is found. It is designated *numerator* in Table 9.

¹ It is desirable, for practical simplicity, to use an odd number of years. When given an even number (1904-13, 1906-13) of years, no important error will in general be made if one of those years is omitted. Thus, in the cases suggested, one should use 1905-13, 1906-12; in the second case it is probable that 1907 is high and 1913 low, and hence it is preferable to use 1906-12 rather than 1907-13 in order that both ends may be more nearly in the same stage of the business cycle. A series shorter than 7 years should not be used.

² In the case of a 9-year series, or a 13-year series, obvious changes would be made: the principle used is that the time factor for the middle year is 0, those for earlier years are successive negative numbers, and those for later years successive positive numbers. Thus, for 1901-1913: -6, -5, —, 5, 6.

TABLE 9—COMPUTATION OF TREND

Year	I	II	III	IV
1903.....	327	-5	-1635	....
1904.....	319	-4	-1276	....
1905.....	390	-3	-1170	....
1906.....	470	-2	-940	....
1907.....	527	-1	-527	....
1908.....	428	0	....	....
1909.....	528	1	....	528
1910.....	632	2	....	1264
1911.....	627	3	....	1881
1912.....	696	4	....	2784
1913.....	721	5	....	3605
	5665	...	-5548	10062
	Numerator = 10062 - 5548 = 4514			

The next operation is to divide this numerator by the appropriate *denominator* given in Table 10. Thus, for the present illustration, the denominator to use is that for the 11-year interval, namely, 110. The result of this division is the *annual increment*, 41.0, which is the normal increase per year in the series under investigation.¹

TABLE 10—DENOMINATORS FOR PERIODIC INTERVALS

Number of Years	Denominator	Number of Years	Denominator
7	28	19	570
9	60	21	770
11	110	23	1012
13	182	25	1300
15	280	27	1638
17	408	29	2030

It is also necessary to calculate the average of the 11 items in column I. This average (515) is the *central value* in the series; and it pertains to the point of time at the very middle of the interval used in getting trend, in this case July 1, 1908.

¹ If the net of columns III and IV had been negative, this annual increment would have been negative, and would have represented therefore the normal decrease per year.

The annual increment and the central value are the two numbers which completely determine the trend. From them we know what is the normal increase (or decrease) from year to year, and what is the level at the middle of the interval. These two numbers enable us to determine the "ordinates of trend."

IX. THE ORDINATES OF TREND

The *ordinates of trend* are the monthly values which the actual items of the series would have had if they all had fallen exactly on the line of trend—if they had been subject to no other cause of variation (such as seasonal or cyclical fluctuations) than the long-time trend.

TABLE II—ORDINATES OF TREND FOR SERIES M

Month	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
January.....	291	332	373	414	455	496	537	578	619	660	701	742
February.....	294	335	375	417	458	499	540	581	622	663	704	745
March.....	297	338	379	420	461	502	543	584	625	666	707	748
April.....	301	342	383	424	465	506	547	588	629	670	711	752
May.....	304	345	386	427	468	509	550	591	632	673	714	755
June.....	307	348	389	430	471	512	553	594	635	676	717	758
July.....	311	352	393	434	475	516	557	598	639	680	721	762
August.....	314	355	396	437	478	519	560	601	642	683	724	763
September.....	317	358	399	440	481	522	563	604	645	686	727	764
October.....	321	362	403	444	485	526	567	608	649	690	731	771
November.....	324	365	406	447	488	529	570	611	652	693	734	772
December.....	328	369	410	451	492	533	574	615	656	697	738	773

The calculation of the individual monthly ordinates proceeds as described below. The central value (see section VIII) is the ordinate for July 1, 1908; and, by deducting from it the annual increment, we could get the ordinate for July 1, 1907, and so on for other years. For the purpose in hand, however, ordinates should pertain to the *middle* rather than the *first* of each month (in order to compare directly with our Index curves, for which data apply to the middle of each month).

The first step therefore consists in getting the ordinate for the middle of each month in the middle year (1908). The annual increment is converted to a *monthly increment* by dividing it by 12. Since the middle of June is one-half month before July 1, the ordinate for June is the central value, diminished by one-half the monthly increment. Likewise, the ordinate for July is

the central value, increased by one-half the monthly increment. The other monthly ordinates of 1908 are then obtained step by step: the ordinate for May by deducting the monthly increment from the ordinate for June, and so on, to January; the ordinate for August by adding the monthly increment to the ordinate for July, and so on, to December.

Thus the monthly ordinates for the months of January and July, 1908, are shown at σ and σ' in Figure 6M, below. The inclined straight line is the trend. It indicates a condition of steady and substantial growth during the period.

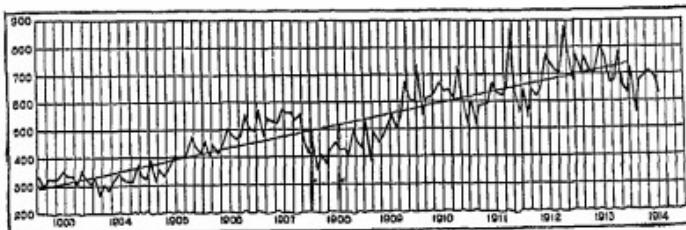


Figure 6M: Sales of Company M (actual data in hundreds of dollars) in pre-war interval

The second operation consists in getting the monthly ordinates of all other years from the corresponding monthly ordinate of 1908. Thus, for January, 1907, deduct the annual increment from January, 1908; for January, 1906, deduct twice the annual increment from January, 1908; for January, 1909, add the annual increment to January, 1908, and so on until all the January ordinates are computed. In a similar way, all the ordinates for each of the months of the year can be found by starting with the corresponding month of 1908. Although it is not safe to assume that the trend calculated for 1903-13 will hold accurately over a much longer time-interval, there is no objection to extending it for a few months. Thus, Table 11 shows the ordinates extending to July, 1914.

It should be remarked, furthermore, that comparison of the January ordinates for 1903 and 1914 affords a partial check on the accuracy of the computations; the difference between the two should be 11 times the annual increment. This check is, however, not conclusive, and great care must be taken to avoid error in getting each individual ordinate.

X. THE ELIMINATION OF TREND AND SEASONAL VARIATION

The *correction* of the original series for trend—the elimination of trend—consists in dividing each actual item by the corresponding ordinate of trend, and expressing the result on a percentage basis. Thus, for January, 1903, the actual item (332) is divided by the ordinate (291) to yield the *per cent ratio* (114). In a similar manner the per cent ratios are computed for all the months, and the complete results are exhibited in Table 12, on page 599, and Figure 7M, below.

The next operation is to correct the per cent ratios for seasonal variation. The indexes of seasonal variation for the pre-war series M are:

108, 91, 101, 94, 96, 106, 100, 97, 97, 113, 102, 96.

It is noted that these are somewhat different from the indexes for the post-war interval, as given in Table 3M on page 580.

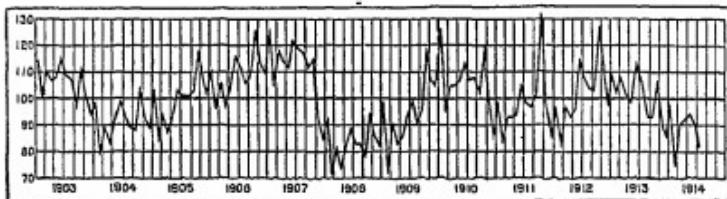


Figure 7M: Sales of Company M (percentage ratios of actual data to ordinates of trend)

The computation of the pre-war indexes of seasonal variation is by rules exactly similar to those used in the post-war case discussed in the first section of this chapter. Month-to-month link relatives are computed, and scored in a multiple frequency table. The medians (true medians—middle items—here, instead of averages of middle three items) are found, and subjected to those adjustments which yield the indexes of seasonal variation.

To correct the per cent ratios for seasonal variation, from each of them the corresponding seasonal index is deducted. Thus, from every January per cent ratio 108 is deducted; from every February per cent ratio 91 is deducted, and so on. The results are the *per cent deviations from normal, corrected for seasonal variation*; and they are shown for series M in Table 13. These results represent the original items with trend and seasonal varia-

TABLE 12—PER CENT RATIOS, ACTUAL ITEMS TO ORDINATES OF TREND, FOR SERIES M

Month	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
January.....	114	98	103	110	125	92	98	125	98	96	109	97
February.....	101	80	85	97	106	72	73	96	84	83	102	76
March.....	110	89	94	106	118	81	90	105	93	97	108	90
April.....	107	83	87	97	114	74	83	105	93	93	101	92
May.....	108	92	92	104	112	83	86	107	94	96	99	94
June.....	115	99	103	116	122	89	94	113	105	114	113	90
July.....	109	92	101	111	119	83	99	107	99	108	106	82
August.....	107	89	101	106	118	83	91	108	97	104	93	...
September....	97	88	103	108	112	79	96	102	102	103	93	...
October.....	111	103	117	125	115	94	118	119	130	126	106	...
November....	101	92	108	113	93	86	107	100	98	112	90	...
December....	94	89	102	110	85	82	105	86	86	98	86	...

tion eliminated. They can be converted to "adjusted relatives" by adding 100 to each "per cent deviation."

XI. CYCLES, AND COMPARISON WITH THE HARVARD INDEX

One further operation is necessary before a satisfactory graphical comparison with the Index curves can be made. This consists in dividing each of the "per cent deviations from normal, corrected for seasonal variation" by the *standard deviation* to yield the *cycles*. This operation has in a sense the same purpose as the rule-of-thumb selection of scales for the post-war interval, described in the first sections of this chapter.

Although the concept of standard deviation is not complicated, its calculation is somewhat laborious. For the present purpose

TABLE 13—PER CENT DEVIATIONS FROM NORMAL, CORRECTED FOR SEASONAL VARIATION, FOR SERIES M

Month	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
January.....	6	-10	-5	2	17	-16	-10	17	-10	-12	1	-11
February.....	10	-11	-6	6	15	-19	-18	5	-7	-8	11	-15
March.....	9	-12	-7	5	17	-20	-11	4	-8	-4	7	-11
April.....	13	-11	-7	3	20	-20	-11	11	-1	-1	7	-2
May.....	12	-4	-4	8	16	-13	-10	11	-2	0	3	-2
June.....	9	-7	-3	10	16	-17	-12	7	-1	8	7	-16
July.....	9	-8	1	11	19	-17	-1	7	-1	8	6	-18
August.....	10	-8	4	9	21	-14	-6	11	0	7	-4	...
September....	0	-9	6	11	15	-18	-1	5	5	6	-4	...
October....	-2	-10	4	12	2	-19	5	6	17	13	-7	...
November....	-1	-10	6	11	-9	-16	5	-2	-4	10	-12	...
December....	-2	-7	6	14	-11	-14	9	-10	-10	2	-10	...

the calculation can be abridged very greatly by using an estimate for the standard deviation. This consists in adding all the "per cent deviations from normal, corrected for seasonal variation" from January, 1903, to December, 1913, assuming that they are all positive (*i. e.*, neglecting all — signs); dividing the resulting total by the number of months (132); and multiplying this quotient by $5/4$. This yields in the present case 10.9, and this is accepted as a fairly good estimate of the standard deviation. The standard deviation is divided into each item of Table 13 to yield the cycles shown in Table 14 on page 601.

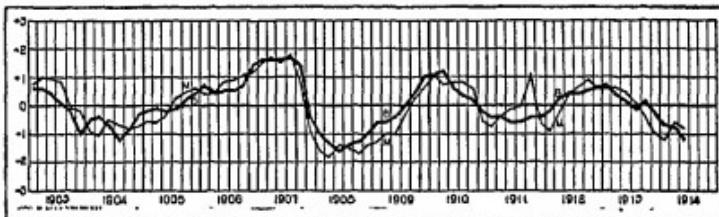


Figure 8M: Sales of Company M (percentage deviations from trend, corrected for seasonal variation and expressed in units of one standard deviation) compared with the Harvard B curve

These cycles can then be plotted and compared directly with the Index curves, for they are in the units for which the scale used in plotting our Index curves is appropriate. Figure 8M, above, shows the cycles of series M (bi-monthly averages of the data of Table 14) thus compared with the curve B, of general business.¹

XII. EXCEPTIONAL CASES

What may be regarded as a typical case has been discussed above: a concern which had become well established as early as 1903, and belonged to an industry or trade in which conditions were fairly well settled and were not subjected to extreme modification during the interval studied. A fairly large number of business concerns which have data for these earlier years will find this case typical for their experience. In such typical cases,

¹ Comparisons may also be made with the Index of Trade (Table C-I, p. 611); and, in the case of series going back of 1903, with the Index of General Business Conditions of the American Telephone and Telegraph Company (Table A-I, p. 603). The figures for the pre-war Harvard Index Chart are given in Table A-II, p. 604.

TABLE 14—CYCLES, FOR SALES OF COMPANY M
(Unit, one standard deviation=10.9%)

Month	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	
January.....	+.6	-.9	-.5	+.2	+.1	-.6	-.1	-.5	+.1	-.9	-.1	+.1	-.1
February.....	+.9	-.1	-.6	+.6	+.1	-.4	-.1	-.7	-.1	-.5	-.6	-.1	-.1
March.....	+.8	-1.1	-.6	+.5	+.1	-.6	-.1	-.6	-.1	-.4	-.7	-.1	-.1
April.....	+.1	-.2	0	+.6	+.3	+.1	-.8	-.1	0	-.1	-.1	+.6	-.1
May.....	+.1	-.1	-.4	+.7	+.1	-.5	-.1	-.2	-.1	-.2	0	+.3	-.2
June.....	+.8	-.6	-.3	+.9	+.1	-.5	-.1	-.6	-.1	-.6	1	+.7	-.6
July.....	+.8	-.7	-.1	+.1	-.1	-.7	-.1	-.6	-.1	-.5	+.1	+.7	-.1
August.....	+.9	-.7	-.1	+.4	+.8	+.1	-.3	-.1	-.6	0	+.6	-.4	..
September.....	0	-.8	-.1	0	+.1	-.1	-.1	-.6	-.1	-.5	+.6	-.6	..
October.....	-.2	-.9	-.1	+.4	-.1	1	-.2	-.1	-.1	-.5	+.6	-.1	..
November.....	-.1	-.9	-.1	+.6	1	0	-.8	-.1	5	-.1	-.6	1.2	0
December.....	-.2	-.6	-.6	+.6	1	-.3	0	-.1	3	-.2	-.9	+.2	0

it is generally safe to determine trend as a straight line (as done above) and to regard a single line of trend as satisfactory for the whole interval.

There are, however, occasional cases in which these assumptions may not be warranted, and this fact will generally appear from an examination of the chart of actual items (corresponding to Figure 6M, on page 597).

The difficulty may take the form of a trend which is clearly a curved rather than a straight line. Or it may turn out that one part of the interval has one trend and another part a quite different trend. It is impossible to present methods of handling these special problems in a general discussion like the present.¹

The methods here presented are confined to the typical case, and they will be sufficient for most needs. The exceptions will usually occur in the case of a new company, or a company engaged in a new industry or trade, or a company rapidly progressing but not yet stabilized, or a department or phase of a concern's activities which has not settled down to the stable state existing in other departments. Each of these exceptional cases presents a problem by itself, and no attempt is made to cover such problems in this presentation.

¹ For a discussion of a trend which is a curved rather than a straight line, see "The Relation of a Public Utility to the Business Cycle," by Homer B. Vandebilt and William L. Crum, *Harvard Business Review*, July, 1924. In the case there discussed (the gross sales of the Public Service Electric Company, which furnishes electricity to five-sixths of the population of New Jersey), the trend during the interval 1914-1919 was more steeply inclined than during the intervals 1904-1914 or 1919-1923.

XII

INDEXES OF GENERAL BUSINESS CONDITIONS

THIS chapter presents important indexes of general business conditions which, in most instances, have been adjusted according to the methods explained in Chapters II and XI. The primary purpose is to furnish typical series of corrected statistics with which the figures of an individual industry or enterprise may be compared, after correction has been made for seasonal or growth influences. Since Government agencies, notably the Federal Reserve Board in the *Federal Reserve Bulletin*, and the Department of Commerce in the *Survey of Current Business*, publish a wide variety of monthly data on business conditions,¹ no attempt has been made to present series other than those of broad interest. Professor Persons' *Indices of General Business Conditions* contains detailed analysis of most available figures for the pre-war years, together with a complete description of their use in the construction of the Harvard Index Chart. The *Monthly Statistical Survey* of the Harvard Economic Service regularly presents the latest figures for the statistical series here reprinted from the publications of the Harvard University Committee on Economic Research. The latest corrected statistics on retail trade discussed in Chapter V appear in the *Federal Reserve Bulletin*.

The statistics of pig-iron production, 1885-1923, and of interest rates, 1866-1923, are included without correction. These two long-time series of actual data may be used by teachers who desire to drill students in the methods of measuring the business cycle devised by Professor Persons and described in previous chapters and in his book. Other uncorrected series appear in the publications cited in the preceding paragraph. The laboratory problems in *An Introduction to the Methods of Economic Statistics*, by W. L. Crum and A. C. Patton, are well chosen for such drill.²

¹ Much of this material, together with other monthly series of business data, is reprinted periodically by the Standard Statistics Company in its *Statistical Bulletin*.

² Published (Second Preliminary Edition) by Harty-Musch Press, New Haven, Conn.

A. INDEXES OF GENERAL BUSINESS CONDITIONS

TABLE I
AMERICAN TELEPHONE AND TELEGRAPH COMPANY GENERAL BUSINESS CURVE, 1877-1923 (Frontispiece)
(Percent deviations from normal)

	Month	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892
January.....	- 9	- 8	- 13	+ 7	+ 12	+ 11	+ 9	- 10	- 16*	- 10	- 2	+ 6	+ 11	+ 5	+ 14		
February.....	- 10	- 9	- 12	+ 3	+ 11	+ 12	+ 4	- 8	- 19	- 3	- 2	+ 5	+ 1	- 5	+ 11		
March.....	- 10	- 10	- 13	+ 11	+ 12	+ 12	+ 2	- 8	- 17	- 6	- 3	+ 10	- 3	- 10	- 6	- 9	
April.....	- 11	- 11	- 13	+ 12	+ 12	+ 12	+ 2	- 7	- 19	- 7	- 8	- 6	- 2	- 4	- 17	- 7	
May.....	- 12	- 11	- 11	+ 10	+ 12	+ 10	+ 2	- 7	- 19	- 6	- 2	- 2	- 4	- 15	- 7	- 7	
June.....	- 8	- 12	- 9	+ 7	+ 13	+ 8	+ 1	- 6	- 14	- 3	- 2	- 3	- 2	- 8	+ 0		
July.....	- 7	- 13	- 7	+ 7	+ 13	+ 5	+ 1	- 6	- 11	- 4	- 2	- 3	- 2	- 6	+ 18		
August.....	- 7	- 13	- 3	+ 7	+ 13	+ 9	+ 2	- 10	- 14	- 2	- 2	- 2	- 2	- 15	+ 13	+ 7	
September.....	- 7	- 13	+ 2	+ 6	+ 12	+ 10	+ 2	- 12	- 1	- 2	- 2	- 2	- 8	- 12	+ 12	+ 8	
October.....	- 7	- 12	+ 6	+ 9	+ 12	+ 10	- 2	- 15	- 11	- 2	- 2	- 7	- 7	- 8	- 7	- 10	
November.....	- 8	- 13	+ 7	+ 11	+ 9	+ 11	- 2	- 18	- 9	- 6	- 3	- 3	- 5	- 5	- 7	- 7	
December.....	- 8	- 13	+ 7	+ 7	+ 11	+ 9	- 2	- 18	- 9	- 6	- 3	- 3	- 5	- 5	- 7	- 7	
January.....	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	
February.....	+ 12	- 14	- 3	- 13	- 2	- 11	- 3	+ 1	+ 10	- 1	+ 2	+ 3*	- 10	- 5	+ 10	+ 17	
March.....	+ 12	- 16	- 9	- 2	- 12	- 3	- 4	+ 10	+ 2	+ 0	+ 2	+ 1	- 5	- 2	+ 9	+ 15	
April.....	+ 11	- 14	- 11	- 8	- 12	- 15	- 7	+ 2	+ 8	+ 5	+ 4	+ 5	- 6	- 2	+ 5	+ 16	
May.....	+ 11	- 14	- 14	- 8	- 15	- 15	- 7	+ 2	+ 6	+ 4	+ 5	+ 5	- 8	- 0	+ 8	+ 18	
June.....	+ 20	- 6	- 18	- 1	- 8	- 13	- 4	+ 6	+ 3	+ 3	+ 4	+ 4	- 3	- 12	+ 7	+ 17	
July.....	- 2	- 18	- 1	- 8	- 14	- 8	+ 3	+ 3	+ 3	+ 3	+ 4	+ 4	- 3	- 12	- 1	- 16	
August.....	- 13	- 10	- 0	- 14	- 10	- 5	- 6	+ 6	+ 0	+ 4	+ 3	+ 3	- 12	- 2	+ 5	+ 12	
September.....	- 17	- 1	- 7	- 1	- 16	- 3	- 5	+ 8	- 3	+ 0	- 0	- 2	- 18	- 2	+ 5	+ 11	
October.....	- 17	- 7	- 6	- 17	- 4	- 16	- 4	- 9	- 4	+ 2	+ 2	+ 2	- 6	- 9	- 4	- 11	
November.....	- 16	- 6	- 4	- 16	- 4	- 16	- 2	- 11	- 4	- 2	- 2	- 2	- 11	- 4	- 7	- 0	
December.....	- 15	- 4	- 3	- 13	- 2	- 13	- 2	- 11	- 1	- 4	- 1	- 4	- 14	- 5	- 7	- 12	
January.....	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1923		
February.....	- 5*	+ 12	+ 0	- 3	+ 10*	- 0	- 16	+ 11	+ 17	+ 4	+ 4*	+ 13	- 16	- 16	+ 8		
March.....	- 5	+ 12	+ 1	+ 3	+ 3	- 0	- 13	+ 12	+ 13	+ 3	+ 3	- 12	- 12	- 10	+ 10		
April.....	- 5	+ 12	+ 0	- 3	+ 3	- 0	- 12	+ 13	+ 14	+ 10	- 6	- 6	- 22	- 22			
May.....	- 3	+ 11	- 3	- 2	+ 5	- 5	- 8	+ 12	+ 9	+ 0	+ 2	+ 2	- 25	- 10*			
June.....	- 2	+ 7	- 1	- 2	+ 5	- 5	- 8	+ 12	+ 14	+ 13	- 2	- 2	- 25	- 14			
July.....	- 1	+ 4	- 2	- 1	+ 5	- 5	- 2	- 3	+ 8	+ 10	+ 14	+ 7	- 8	- 25	- 12		
August.....	+ 2	+ 4	- 1	- 1	+ 5	- 3	- 2	- 2	- 12	+ 12	+ 15	- 7	- 7	- 21	- 10		
September.....	+ 5	+ 4	- 1	- 1	+ 5	- 3	- 10	+ 2	+ 13	+ 7	+ 11	+ 8	- 5	- 10	- 5		
October.....	+ 8	+ 4	- 1	- 1	+ 3	- 5	- 13	+ 5	+ 15	+ 9	+ 10	+ 7	- 6	- 16	- 2		
November.....	+ 9	+ 2	- 1	- 1	+ 7	- 2	- 17	+ 9	+ 17	+ 15	+ 6	+ 7	- 6	- 15	+ 2		
December.....	+ 10	+ 1	- 2	- 2	+ 7	- 2	- 18	+ 17	+ 14	+ 6	+ 6	+ 6	- 8	- 11	- 2		

* Denotes months in which composition of curve changes.

TABLE II
THE HARVARD INDEX CHART, 1903-1914 (Figure 10, p. 33)¹
(Unit: One standard deviation)

CURVE A

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1903	+.2	.0	-.3	-.5	-.5	-.8	-.1.0	-.1.5	-.1.6	-.1.6	-.1.7	-.1.4
1904	-.3	-.3	-.4	-.3	-.3	-.3	-.9	-.8	-.5	0	+.5	+.5
1905	+.4	+.8	+.1	+.1	+.0	+.7	+.6	+.8	+.1.1	+.1.0	+.1.0	+.1.5
1906	+.2	+.6	+.3	+.2	+.1.0	+.1.0	+.8	+.1.4	+.1.3	+.1.3	+.1.2	+.1.2
1907	+.0	+.7	+.2	-.1	-.3	-.6	-.4	-.7	-.1.0	-.1.5	-.2.5	-.2.2
1908	-.1.5	-.1.6	-.1.5	-.1.2	-.7	-.9	-.6	-.2	-.2	-.2	+.3	+.6
1909	+.5	+.5	+.5	+.8	+.8	+.1.1	+.1.1	+.1.3	+.1.2	+.1.2	+.1.0	+.1.1
1910	+.1.0	+.7	+.7	+.4	+.2	+.2	-.2	-.3	-.1	0	+.1	-.1
1911	0	+.2	0	0	+.2	+.4	+.3	+.1	-.1	-.4	0	-.1
1912	0	+.1	+.2	+.4	+.4	+.2	+.2	+.3	+.2	+.3	+.2	0
1913	-.1	-.2	-.4	-.5	-.8	-.1.1	-.1.0	-.9	-.6	-.8	-.1.1	-.1.1
1914	-.8	-.5	-.6	-.6	-.7	-.6	-.8					

CURVE B

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1903	+.7	+.6	+.6	+.6	+.3	+.4	+.3	-.2	-.1	-.3	-.9	-.1.1
1904	-.8	-.2	-.3	-.4	-.6	-.8	-.1.2	-.1.0	-.8	-.8	-.4	-.2
1905	-.2	-.2	0	-.1	-.1	-.3	-.4	+.1	+.2	+.2	+.4	+.5
1906	+.8	+.6	+.5	+.4	+.5	+.5	+.4	+.5	+.5	+.9	+.1.3	+.1.4
1907	+.1.7	+.1.6	+.1.7	+.1.6	+.1.7	+.1.6	+.1.8	+.1.6	+.1.3	+.1.6	+.2	-.8
1908	-.9	-.1.0	-.1.4	-.1.2	-.1.5	-.1.7	-.1.4	-.1.4	-.1.3	-.1.3	-.1.2	-.8
1909	-.7	-.6	-.7	-.6	-.5	-.3	0	+.1	+.3	+.5	+.9	+.1.1
1910	+.1.2	+.1.0	+.1.2	+.1.1	+.7	+.6	+.4	+.3	+.2	+.1	-.1	-.3
1911	-.4	-.4	-.2	-.6	-.7	-.6	-.6	-.5	-.3	-.5	-.4	-.4
1912	-.3	0	-.1	+.4	+.6	+.2	+.4	+.4	+.3	+.7	+.6	+.6
1913	+.7	+.7	+.7	+.4	+.4	+.2	0	-.1	-.1	+.1	+.1	-.3
1914	-.7	-.7	-.7	-.9	-.1.1	-.1.2	-.1.0					

CURVE C

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1903	+.4	+.2	+.6	+.6	+.4	+.8	+.9	+.1.0	+.7	+.6	+.9	+.7
1904	+.1	+.2	-.1	-.8	-.9	-.9	-.1.2	-.1.4	-.1.6	-.1.5	-.1.5	-.1.2
1905	-.1.1	-.1.1	-.1.1	-.8	-.8	-.7	-.8	-.1.0	-.5	-.1	+.2	+.6
1906	+.4	+.6	+.8	+.9	+.9	+.7	+.7	+.9	+.1.1	+.8	+.1.0	+.1.0
1907	+.1.0	+.1.2	+.1.5	+.1.0	+.5	+.8	+.1.0	+.1.2	+.1.2	+.1.3	+.1.0	+.1.4
1908	+.1.1	+.6	+.6	-.2	-.7	-.6	-.9	-.1.4	-.1.6	-.1.7	-.1.7	-.1.7
1909	-.1.5	-.1.2	-.1.1	-.1.3	-.1.3	-.1.3	-.1.4	-.1.2	-.1.2	-.2	+.2	+.1
1910	+.3	+.4	+.2	+.6	+.8	+.9	+.1.2	+.8	+.4	+.6	+.7	0
1911	-.1	-.1	-.5	-.7	-.6	-.5	-.6	-.4	-.4	-.6	-.8	-.2
1912	-.7	-.6	-.4	-.2	-.1	-.3	0	+.2	+.5	+.8	+.9	+.1.1
1913	+.4	+.7	+.1.3	+.1.2	+.1.2	+.1.6	+.1.5	+.1.3	+.9	+.9	+.9	+.1.0
1914	+.3	-.2	-.4	-.6	-.5	-.3	+.3					

¹ Curve A includes: (1) Yield on Railroad Bonds (reversed), (2) Price of Industrial Stocks, (3) Price of Railroad Stocks, (4) New York Bank Clearings; Curve B includes: (1) Pig Iron Production, (2) Bank Clearings Outside New York, (3) Bradstreet's Price Index, (4) United States Bureau of Labor Statistics Price Index; Curve C includes: (1) Rate on 4-6 month Commercial Paper, (2) Rate on 60-90 day Commercial Paper, (3) Loans of New York Banks (reversed), (4) Deposits of New York Banks (reversed).

TABLE III

THE HARVARD INDEX CHART, 1919-1923 (Figure 3, p. 22)
(Base line or line of trend = 0)

Month	GROUP A			GROUP B			GROUP C		
	New York Bank Debits	Price of 2d In- dustrial Stocks	The Group	Outside Bank Debits	Com- modity Prices	The Group	Rate on 4-6 Months Paper (Good)	Rate on 4-6 Months Paper (Prime)	The Group
	(10.85)	(15.03)		(8.62)	(8.95)		(16.73)	(17.96)	
Unit.....									
1919									
January..	-1.70	-.56	-1.13	-1.62	-.14	-.88	-.15	-.15	-.16
February..	-1.46	-.53	-1.00	-1.88	-.40	-1.14	-.22	-.18	.20
March....	-1.79	-.13	-.96	-2.17	-.76	-1.46	-.15	-.01	-.08
April....	-1.03	+.14	-.44	-1.64	-.82	-1.23	-.20	-.06	-.13
May.....	+.48	+.77	+.02	-.44	-.30	-.40	-.18	-.03	-.10
June.....	+.79	+.22	+.00	-.30	-.02	-.16	-.01	+.12	+.06
July.....	+.82	+.56	+.09	+.68	+.02	+.35	-.19	-.06	-.12
August...	+.42	+.01	+.22	+.90	+.08	+.54	-.32	-.18	-.25
September..	+.11	+.38	+.24	+.46	-.10	+.18	-.36	-.22	-.29
October...	+.40	+.80	+.03	+.53	+.00	+.26	-.27	-.13	-.20
November..	+.01	+.62	+.02	+.22	+.47	+.34	-.26	-.12	-.19
December..	+.09	+.24	+.16	+.77	+.76	+.70	+.11	+.24	+.18
1920									
January..	+.60	+.16	+.88	+.30	+.84	+.07	+.19	+.38	+.28
February..	+.36	+.40	+.38	+.02	+.88	+.95	+.51	+.62	+.56
March....	+.86	+.78	+.82	+.44	+.06	+.20	+.84	+.87	+.85
April....	+.87	+.88	+.88	+.55	+.33	+.44	+.71	+.77	+.74
May.....	+.13	+.17	+.15	+.54	+.98	+.70	+.90	+.90	+.90
June.....	-.07	+.17	+.05	+.07	+.20	+.94	+.48	+.46	+.47
July.....	+.17	+.17	+.14	+.17	+.86	+.02	+.70	+.65	+.68
August...	-.11	-.27	-.19	+.88	+.48	+.68	+.07	+.01	+.04
September..	-.41	-.16	-.28	+.60	+.40	+.50	+.10	+.09	+.10
October...	-.40	-.31	-.36	+.79	+.88	+.84	+.24	+.29	+.26
November..	+.13	-.80	-.34	+.46	+.24	+.35	+.12	+.16	+.14
December..	+.01	-.28	-.64	+.12	-.14	-.01	+.85	+.92	+.88
1921									
January..	-.90	-.04	-.97	-.66	-.50	-.58	+.01	-.07	+.04
February..	-.19	-.01	-.10	-.92	-.83	-.88	+.90	+.96	+.93
March....	-.47	-.03	-.24	-.18	-.30	-.27	+.70	+.77	+.74
April....	-.49	-.02	-.20	-.02	-.48	-.25	+.65	+.69	+.67
May.....	-.02	-.88	-.95	-.08	-.10	-.09	+.04	+.02	+.03
June.....	-.11	-.49	-.36	-.17	-.10	-.14	+.79	+.68	+.74
July.....	-.18	-.54	-.36	-.30	-.54	-.42	+.43	+.42	+.42
August...	-.25	-.66	-.46	-.70	-.62	-.16	+.15	+.19	+.17
September..	-.21	-.41	-.31	-.06	-.10	-.08	+.16	+.20	+.18
October...	-.59	-.32	-.43	-.30	-.88	-.09	-.01	-.05	-.04
November..	-.12	-.97	-.04	-.50	-.20	-.35	-.31	-.32	-.32
December..	-.80	-.69	-.74	-.47	-.42	-.14	-.19	-.19	-.19
1922									
January..	-.31	-.61	-.96	-.89	-.44	-.66	-.35	-.33	-.34
February..	-.44	-.37	-.40	-.31	-.36	-.34	-.39	-.37	-.38
March....	-.04	-.13	-.08	-.18	-.32	-.25	-.48	-.47	-.48
April....	+.58	+.19	+.38	-.15	-.26	-.20	-.68	-.64	-.66
May.....	-.12	-.34	-.73	-.38	-.91	-.64	-.94	-.91	-.92
June.....	+.05	-.32	-.08	-.26	-.50	-.38	-.20	-.17	-.18
July.....	+.88	-.45	-.46	-.47	-.28	-.38	-.15	-.20	-.18
August...	-.37	-.69	-.53	+.01	-.16	-.08	-.11	-.22	-.16
September..	-.46	-.81	-.04	-.31	-.04	-.14	-.92	-.86	-.89
October...	-.56	-.84	-.76	-.23	-.03	-.10	-.79	-.73	-.76
November..	-.40	-.51	-.05	-.73	-.06	-.34	-.57	-.57	-.57
December..	-.09	-.64	-.02	-.14	-.34	-.10	-.57	-.57	-.57
1923									
January..	-.05	+.66	+.30	+.43	+.62	+.52	-.69	-.68	-.68
February..	+.88	+.95	+.92	+.80	+.63	+.71	-.41	-.35	-.38
March....	+.98	+.14	+.06	+.70	+.88	+.66	-.35	-.14	-.24
April....	+.47	+.93	+.77	+.48	+.68	+.15	+.01	-.07	-.07
May.....	+.07	+.53	+.60	+.73	+.24	+.98	+.09	+.11	+.01
June.....	+.53	+.35	+.44	+.37	-.14	+.62	-.14	-.00	-.07
July.....	-.19	+.01	-.01	-.76	-.38	-.20	-.22	-.33	-.30
August...	-.72	+.13	-.30	+.09	-.32	-.38	-.26	-.33	-.30
September..	-.83	+.09	-.37	-.80	-.46	-.13	-.38	-.47	-.42
October...	-.83	+.11	+.47	+.59	-.70	-.06	-.48	-.58	-.53
November..	+.05	+.14	+.10	+.16	+.75	-.30	-.56	-.48	-.52
December..	-.15	+.37	+.11	-.35	-.66	-.16	-.60	-.77	-.68

B. PRICE INDEXES

TABLE I

TEN COMMODITY PRICE INDEX OF BUSINESS CYCLES: MONTHLY, 1890-1923 (Figure 2, pp. 18-19)

(The Index is a simple geometric average of prices for the first of each month of 10 commodities relative to their geometric average price for 1890-99 as base. The commodities are: pig iron, bar iron, coke, shelter, hides, cotton sheetings, print cloths, worsted yarns, salt mess pork, and cottonseed oil.)

Date	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906
January	114.7	112.7	105.1	113.8	90.8	81.9	93.3	85.9	87.9	90.7	132.7	108.5	122.2	138.9	114.2	117.2	138.0
February	115.2	111.1	105.4	119.4	88.6	79.0	92.2	85.5	88.2	93.9	133.4	110.0	121.5	139.4	115.7	120.2	133.2
March	115.1	111.0	103.3	118.8	87.4	78.7	90.4	84.9	88.4	99.9	135.2	109.0	124.4	139.8	116.3	119.7	134.0
April	114.5	112.6	101.5	112.1	85.0	83.9	86.7	83.6	87.1	104.8	136.9	111.6	126.8	138.9	115.8	117.3	133.1
May	116.2	111.2	101.2	111.2	84.9	86.0	86.7	81.8	88	106.9	131.7	110.8	129.2	138.6	110.5	115.6	135.5
June	118.6	111.6	102.4	108.7	83.8	91.0	86.8	82.7	90	110.3	124.1	110.6	131.4	134.5	109.6	116.1	132.1
July	118.9	111.1	105.6	106.6	84.2	94.6	86.8	82.7	89	111.5	116.5	113.0	131.0	134.1	108.0	117.3	132.8
August	120.2	112.4	106.3	108.2	88.9	95.2	83.3	85.2	88.1	116.8	113.2	112.3	132.3	125.9	107.4	122.6	136.5
September	119.9	110.8	105.7	95.4	90.8	95.5	83.3	88.8	88.3	120.3	112.4	113.8	136.4	124.4	106.7	125.3	139.0
October	118.2	111.0	104.6	98.1	86.8	99.7	85.2	90.3	87.3	124.4	112.8	118.3	139.6	121.0	108.0	129.0	142.3
November	118.4	106.2	105.9	97.8	84.1	99.7	86.4	89.1	87.4	123.4	111.4	117.6	135.1	113.3	112.4	135.0	149.4
December	117.2	110.7	93.9	83.2	91.5	88.0	87.4	87.0	128.8	109.8	119.1	113.6	111.0	118.3	137.7	152.8	
Date	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
January	154.0	127.2	125.8	154.6	131.9	122.2	153.8	131.7	121.2	176.4	251.4	307.4	305.2	363.4	202.3	164.9	236.3
February	157.2	119.4	124.8	151.5	130.3	122.6	149.6	132.5	127.1	181.5	252.6	311.5	286.4	370.2	193.3	163.7	242.8
March	157.5	117.7	123.7	150.1	130.2	126.0	145.9	132.5	129	193.0	266.0	314.8	270.4	374.0	178.1	170.6	240.4
April	153.2	117.0	122.0	144.5	126.2	130.4	142.7	132.1	119.2	327.5	321.4	262.0	372.2	159.8	166.9	241.8	
May	154.0	118.2	125.7	139.4	124.4	138.1	136.8	130.0	138.5	195.4	280.2	327.2	267.6	395.2	158.9	174.0	234.1
June	156.0	119.6	128.2	138.8	124.6	136.3	138.4	130.2	146.4	194.6	310.5	329.3	298.1	395.8	160.8	184.7	223.0
July	156.8	121.2	132.7	136.9	124.9	138.5	141.8	130.9	148.1	191.0	327.2	329.8	312.4	387.6	157.1	195.0	209.0
August	154.6	120.4	133.6	139.0	123.1	139.0	143.0	129.7	143.1	193.0	319.7	331.6	332.6	355.9	153.2	195.1	205.4
September	153.3	117.4	140.1	139.1	125.0	141.9	142.9	128.8	145.0	193.0	324.6	332.5	333.2	358.9	198.6	205.4	
October	151.8	118.3	151.5	135.4	121.4	146.3	140.7	120.3	152.2	207.5	302.1	337.1	314.0	315.1	159.1	209.6	204.6
November	142.9	121.3	156.3	137.7	120.1	150.3	137.5	119.2	157.3	238.3	308.9	340.2	338.4	268.0	171.3	219.2	202.3
December	130.3	126.6	156.3	131.9	121.4	153.3	133.3	119.5	166.6	251.1	305.1	353.3	227.6	163.2	232.5	207.8	

TABLE II
TEN COMMODITY PRICE INDEX
(Average for 1919 = 100)

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1919	99.2	93.1	87.8	85.2	87.0	91.6	101.6	108.1	105.8	102.1	110.0	114.8
1920	118.2	120.4	121.6	121.0	128.5	128.5	124.1	115.7	108.7	102.5	87.2	74.0
1921	65.8	62.9	57.9	51.9	51.7	52.3	51.1	49.8	52.1	55.9	55.7	53.1
1922	53.6	53.2	55.5	54.3	56.6	60.1	63.4	63.4	64.6	68.2	71.3	75.6
1923	76.9	78.9	78.2	78.7	76.1	72.6	68.0	66.7	67.8	66.5	65.8	67.6

TABLE III
MONTHLY RELATIVE WHOLESALE PRICES¹ (ALL COMMODITIES)
(a) 1900-1913
(Average for 1890-1899 = 100)

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly Average
1900	111.4	112.5	112.9	112.9	111.4	110.2	109.3	103.2	108.0	108.7	109.6	109.5	110.5
1901	108.3	107.9	108.2	107.6	107.3	107.1	107.0	108.5	109.4	109.4	109.9	112.4	108.5
1902	103.3	110.4	110.9	111.7	113.3	113.3	113.0	112.2	112.3	115.5	114.6	115.3	112.9
1903	115.9	116.1	115.9	114.9	113.2	113.2	114.5	112.6	113.3	112.3	112.1	117.7	113.6
1904	113.2	114.4	114.6	114.0	113.2	112.9	112.0	112.0	112.0	111.8	112.7	113.5	113.0
1905	114.0	115.2	114.9	114.6	113.6	114.1	114.3	116.0	116.0	117.6	118.7	119.8	115.0
1906	120.8	121.1	121.0	121.0	121.2	121.0	121.6	122.2	122.3	122.0	121.5	125.7	127.6
1907	127.9	129.0	129.4	129.0	129.6	129.1	129.3	130.3	130.3	130.8	131.0	128.0	126.4
1908	125.7	124.6	124.2	124.0	124.2	123.5	121.5	121.4	121.8	122.1	122.1	123.0	122.8
1909	124.0	124.0	124.5	124.6	125.4	125.5	126.2	126.4	128.1	129.0	130.9	132.2	126.5
1910	132.7	132.9	133.8	133.3	131.9	131.1	130.7	131.0	131.1	130.8	130.1	130.4	131.6
1911	128.9	129.0	129.3	129.0	128.1	128.4	128.8	128.4	129.0	129.8	129.2	129.9	129.2
1912	130.5	130.7	132.3	134.8	134.5	134.3	134.4	133.7	134.7	133.2	135.4	135.1	133.6
1913	134.9	135.3	135.1	135.0	134.3	134.1	134.3	134.4	135.0	136.3	135.8	135.7	135.2

(b) 1913-1923
(1913 Monthly Average = 100)

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1913	100	100	100	100	99	99	100	100	102	101	100	99
1914	98	99	98	98	97	97	97	101	102	97	97	97
1915	98	99	99	99	100	99	100	100	100	102	104	108
1916	113	115	119	121	122	123	123	126	130	136	146	149
1917	153	157	162	173	183	185	188	189	187	183	183	182
1918	184	186	187	190	190	191	196	200	204	202	203	202
1919	199	193	196	199	202	203	212	216	210	211	217	223
1920	233	232	234	245	247	243	241	231	226	211	196	179
1921	170	160	155	148	145	142	141	142	141	142	141	140
1922	138	141	142	143	148	150	155	155	153	154	156	156
1923	156	157	159	159	156	153	151	150	154	153	152	151

¹ Published by United States Bureau of Labor Statistics.

TABLE IV
BRADSTREET'S INDEX OF COMMODITY PRICES¹
(Unit = \$.)

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1897	6.12	6.08	6.05	6.05	5.96	5.83	5.85	6.06	6.21	6.45	6.47	6.51
1898	6.57	6.55	6.60	6.43	6.50	6.52	6.58	6.67	6.70	6.70	6.72	6.73
1899	6.80	6.89	6.96	6.88	6.89	7.00	7.09	7.21	7.46	7.64	7.72	7.98
1900	8.02	8.23	8.22	8.13	7.99	7.81	7.72	7.73	7.66	7.75	7.65	7.73
1901	7.57	7.57	7.55	7.53	7.43	7.42	7.52	7.59	7.60	7.73	7.67	7.73
1902	7.66	7.69	7.76	7.78	7.88	7.87	7.84	7.88	7.93	7.49	8.09	8.14
1903	8.08	8.08	8.13	8.12	7.96	7.88	7.87	7.75	7.76	7.91	7.87	7.84
1904	7.99	8.10	8.09	7.97	7.94	7.79	7.63	7.76	7.78	7.92	8.00	8.06
1905	8.08	8.08	8.10	8.00	7.97	7.91	7.92	8.11	8.28	8.23	8.21	8.30
1906	8.33	8.24	8.23	8.30	8.31	8.32	8.28	8.34	8.45	8.56	8.75	8.90
1907	8.92	9.00	9.13	8.96	8.94	8.99	9.04	8.93	8.83	8.85	8.75	8.52
1908	8.29	8.13	7.99	8.07	7.96	7.72	7.82	7.93	7.91	8.01	8.07	8.21
1909	8.26	8.30	8.22	8.32	8.30	8.40	8.46	8.50	8.59	8.75	8.96	9.13
1910	9.23	9.07	9.11	9.20	9.04	8.91	8.92	8.82	8.95	8.93	8.88	8.78
1911	8.84	8.77	8.69	8.52	8.46	8.53	8.59	8.66	8.82	8.81	8.89	8.98
1912	8.95	8.96	8.90	9.10	9.27	9.10	9.11	9.16	9.22	9.45	9.48	9.55
1913	9.49	9.46	9.41	9.30	9.14	9.07	8.95	9.01	9.10	9.15	9.23	9.23
1914	8.89	8.86	8.83	8.76	8.62	8.62	8.66	8.71	9.76	9.24	8.86	9.04
1915	9.14	9.66	9.62	9.78	9.80	9.74	9.87	9.82	9.80	9.98	10.38	10.65
1916	10.92	11.14	11.38	11.76	11.75	11.69	11.53	11.44	11.78	12.04	12.80	13.66
1917	13.73	13.94	14.14	14.58	15.12	15.47	16.07	16.40	16.64	16.91	17.07	17.60
1918	17.94	18.05	18.05	18.44	18.89	18.98	19.16	19.09	19.03	18.99	18.89	19.02
1919	18.53	17.63	17.22	17.28	17.24	18.09	18.90	20.00	19.47	19.52	19.90	20.18
1920	20.36	20.87	20.80	20.71	20.73	19.88	19.35	18.83	17.97	16.91	15.68	13.63
1921	12.66	12.37	11.86	11.37	10.82	10.62	10.73	11.06	11.09	11.19	11.35	11.31
1922	11.37	11.42	11.60	11.53	11.70	11.90	12.11	12.07	12.08	12.50	13.35	13.78
1923	13.72	13.72	13.93	13.93	13.67	13.38	13.09	12.82	12.91	13.10	13.14	13.44

¹Source of data: January, 1897—December, 1902, Bradstreet's, vol. 33, p. 786 (December 16, 1905); January, 1903—December, 1918, Review, vol. I, p. 70, January, 1919—December, 1923, Bradstreet's, vol. 52, p. 2. (January 5, 1924.)

TABLE V
DUN'S "TOTAL" INDEX NUMBERS
(Unit = Tenth of a dollar)

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Avg. for Year
1898	799	806	811	801	834	829	778	770	768	760	779	792	794
1899	804	817	842	842	845	858	852	860	882	913	922	944	865
1900	953	962	966	974	951	918	914	915	907	926	913	924	935
1901	957	950	949	949	962	938	915	953	969	969	977	1014	959
1902	1016	996	1016	992	1023	1012	1019	1002	967	1006	996	1004	1004
1903	1004	1009	1011	993	986	989	995	979	985	974	978	982	990
1904	1001	1021	1036	1025	1022	1010	972	972	978	984	994	1006	1002
1905	1003	1010	1019	992	976	988	983	998	1003	1004	1039	1053	1006
1906	1045	1040	1042	1061	1061	1068	1052	1030	1043	1052	1067	1082	1053
1907	1073	1074	1099	1079	1090	1137	1137	1137	1161	1161	1136	1133	1118
1908	1133	1099	1104	1087	1102	1080	1082	1095	1093	1100	1099	1110	1099
1909	1118	1135	1154	1169	1183	1210	1190	1180	1170	1183	1208	1234	1178
1910	1234	1224	1228	1216	1183	1172	1192	1185	1174	1154	1146	1147	1188
1911	1151	1143	1123	1109	1143	1134	1181	1198	1193	1193	1220	1229	1168
1912	1234	1254	1235	1280	1290	1260	1223	1240	1225	1231	1235	1221	1244
1913	1208	1197	1205	1192	1183	1200	1163	1185	1221	1239	1255	1257	1209
1914	1245	1216	1218	1198	1182	1211	1197	1207	1270	1235	1243	1242	1222
1915	1242	1257	1242	1251	1266	1260	1250	1251	1247	1267	1305	1331	1264
1916	1377	1423	1421	1457	1462	1454	1451	1439	1520	1524	1648	1681	1488
1917	1696	1763	1862	1900	2084	2126	2120	2188	2150	2197	2208	2202	2041
1918	2222	2270	2280	2303	2267	2248	2326	2321	2329	2334	2305	2304	2292
1919	2301	2200	2170	2200	2222	2280	2337	2416	2383	2359	2386	2446	2308
1920	2474	2537	2530	2579	2633	2621	2604	2523	2483	2373	2272	2116	2479
1921	1986	1858	1819	1744	1667	1660	1598	1637	1626	1618	1637	1645	1708
1922	1644	1650	1697	1663	1681	1700	1737	1736	1725	1756	1883	1855	1722
1923	1856	1862	1912	1931	1929	1914	1887	1867	1880	1908	1918	1909	1898

¹Data 1898-1920 from "Commodity Prices—A record covering a period of over half a century" by Dun's Review; 1921—Nov. '23 from Dun's Review, Nov. 10, 1923; Dec. 8 '23 from ibid., Dec., 1923.

C. INDEXES OF TRADE

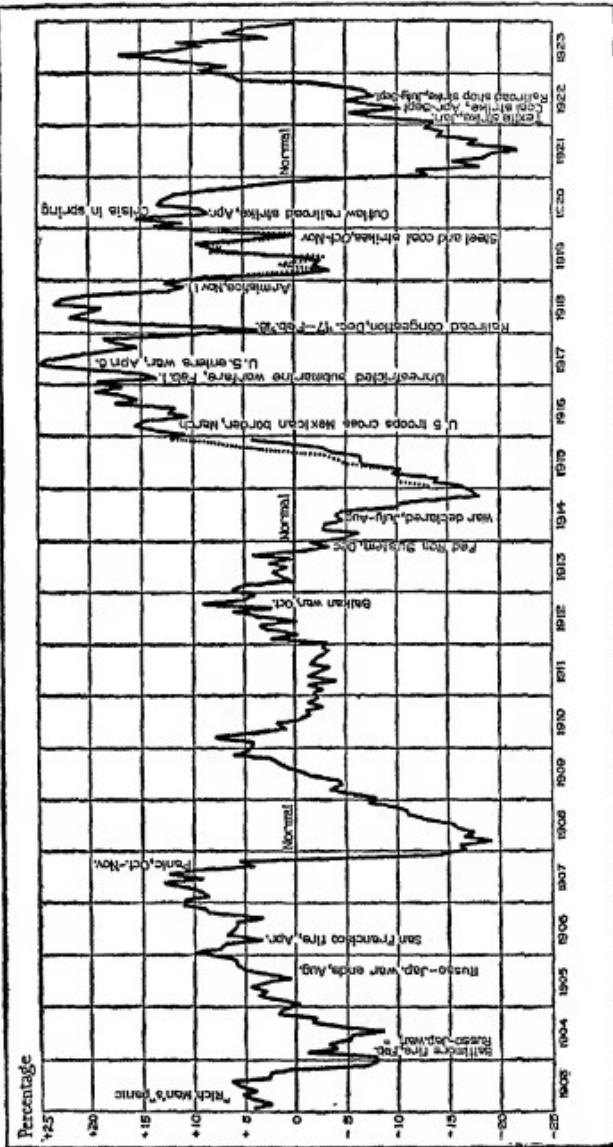


Figure 42: This Index of Trade for the United States is designed to give a view of the combined fluctuation of trade, transportation, manufacturing activity, and industrial employment, month by month, since January, 1903.

TABLE I
HARVARD INDEX OF TRADE¹
(Percentage deviations from normal)

Month	1903	1904	1905	1906	1907	1908	1909	1910	1911
January.....	+4.1	-7.8	-3	+9.8	+10.0	-16.6	-7.8	+4.2	-1.0
February.....	+2.4	-1.4	+1.2	+2.4	+8.6	-16.2	-5.0	+4.2	-2.8
March.....	+2.4	-4.0	+3.6	+6.7	+9.3	-16.0	-3.6	+7.8	-1.4
April.....	+5.2	-3.4	+1.0	+3.4	+10.7	-16.7	-4.7	+3.8	-4.1
May.....	+4.1	-5.2	+4.3	+4.3	+12.9	-17.4	-4.3	+1.9	+1.4
June.....	+5.5	-2.6	+2.9	+6.0	+9.2	-15.9	-1.7	+1.0	-2.4
July.....	+6.2	-4.7	+3.5	+5.7	+12.4	-15.4	-0.9	-1.5	-3.4
August.....	+2.6	-4.7	+3.5	+5.7	+9.7	-12.5	+1.7	-1.4	-1.0
September.....	+2.4	-1.7	+5.0	+8.0	+4.1	-11.0	+1.6	+1.2	-2.1
October.....	+5.8	-1.9	+5.7	+8.0	+5.4	-10.7	+2.4	-2.8	-2.8
November.....	-6.8	-1.6	+9.0	+9.0	-9.0	-9.7	+5.9	-1.4	-3.4
December.....	-7.8	+1.2	+0.7	+11.0	-14.3	-7.2	+4.7	-2.4	-2.1

Month	1912	1913	1914	1915	*1915	1916	1917	1918	1919
January.....	-3.1	+6.0	-4.7	-16.4	-13.2	+10.6	+19.2	+3.6	+9.3
February.....	+2.1	+5.0	-6.0	-13.8	-10.2	+13.7	+13.5	+0.8	+1.0
March.....	-1.2	+2.2	-2.8	-14.0	-10.1	+15.4	+14.9	+18.5	-3.3
April.....	+2.8	+4.4	-2.9	-9.5	-10.5	+14.7	+20.1	-21.8	-1.8
May.....	+3.4	+2.1	-4.1	-10.3	-9.4	+10.4	-24.9	+20.1	-2.5
June.....	0	+7.7	-4.1	-6.6	-5.0	+12.3	+24.0	+18.9	-0.9
July.....	+3.6	+4.4	-4.7	-6.4	-4.3	+17.7	+21.3	+23.4	+5.6
August.....	+5.9	+3	-9.7	-6.4	-4.9	+17.4	+18.6	+22.8	+8.4
September.....	+2.4	+4.1	-10.2	-3.6	+1.2	+15.3	+15.4	+19.6	+9.6
October.....	+9.0	-1.2	-14.2	-2.6	+5.0	+10.9	+17.3	+12.2	+3.7
November.....	+5.0	-3.3	-17.0	+5	+8.2	+10.3	+18.5	+10.8	+3.3
December.....	+4.0	-1.6	-17.4	+4.3	+12.0	+16.9	+11.6	+12.3	+7.1

Month	1919	1920	1921	1922	1923
January.....	+9.2	+13.4	-13.0	-13.5	+9.2
February.....	+2.8	+10.8	-12.0	-7.8	+6.8
March.....	-2.8	+15.2	-18.0	-5.6	+11.2
April.....	+1.2	+8.5	-15.3	-10.2	+13.9
May.....	-1.2	+9.0	-18.4	-7.5	+16.7
June.....	-3.1	+13.2	-19.1	-5.1	+11.7
July.....	+8.2	+12.8	-21.7	-7.7	+9.3
August.....	+7.4	+11.8	-17.0	-7.0	+11.1
September.....	+8.5	+9.8	-17.8	-5.5	+2.8
October.....	+2.8	+5.8	-14.1	-3.0	+6.8
November.....	0	+2.4	-14.4	+5.4	+4.9
December.....	+8.4	-1.3	-12.8	+5.8	+0.2

*The Index of Trade is composed of three sections with two overlapping years: January, 1903, to December, 1915; January, 1915, to January, 1919; and January, 1919, to date. These sections are necessary because certain statistics are not available throughout the entire period and others, being expressed in terms of dollars, do not accurately reflect fluctuations in the physical volume of trade since the war.

All statistics utilized have been adjusted for long-time trend and seasonal influences. The resulting index, therefore, shows cyclical fluctuations in the physical volume of trade, transportation, manufacturing activity, and industrial employment combined.

STATISTICS UTILIZED:

1903-15

Bank clearings outside New York City
Imports of merchandise
Gross earnings of leading railroads
Production of pig iron
Industrial employment

1915-19

Net ton-miles of freight carried by railroads
Production of pig iron

1915-19

Raw cotton consumed by textile mills
Industrial employment

1919-23

Total railroad car loadings
Production of pig iron
Production of steel ingots
Raw cotton consumed by textile mills
Industrial employment

¹Review, prel. vol. 5, pp. 71-78.

TABLE II

INDEX OF ADVERTISING IN NEWSPAPERS AND MAGAZINES, BASED UPON THE AVERAGE FOR 1919-1921 AS 100, AND CORRECTED FOR SEASONAL VARIATION (Figure 16, p. 54)

NEWSPAPERS MAGAZINES

Month	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
January.....	76	115	95	98	108	78	127	95	77	92
February.....	87	118	96	100	108	85	130	85	75	97
March.....	84	114	94	100	113	90	133	78	72	97
April.....	89	102	90	103	116	96	132	68	74	100
May.....	94	106	96	101	113	99	132	68	76	98
June.....	100	108	93	102	111	101	127	71	78	94
July.....	103	105	93	102	110	103	124	76	80	95
August.....	105	108	94	105	107	101	127	75	83	94
September.....	105	107	94	105	112	104	124	67	81	94
October.....	107	106	93	108	115	106	118	64	89	105
November.....	110	103	98	111	115	116	118	66	90	106
December.....	108	102	100	108	116	130	115	71	91	101

TABLE III

INDEX OF TOTAL ADVERTISING IN NEWSPAPERS, 1910-1918, BASED UPON THE AVERAGE FOR 1913 AS 100, AND CORRECTED FOR SEASONAL VARIATION (Figure 18, p. 57)

Month	1910	1911	1912	1913	1914	1915	1916	1917	1918
January.....	91	92	91	96	98	96	111	124	108
February.....	96	97	96	101	97	94	111	122	108
March.....	99	92	98	106	104	97	111	122	123
April.....	92	97	96	101	103	99	121	123	120
May.....	91	89	84	100	109	99	116	114	120
June.....	88	87	95	101	95	99	116	113	117
July.....	94	91	91	96	97	99	115	116	120
August.....	91	89	95	100	97	101	114	117	120
September.....	94	92	102	100	92	101	117	123	123
October.....	98	92	96	98	89	105	121	123	118
November.....	104	94	102	103	96	105	122	120	124
December.....	95	97	107	98	94	109	122	119	133

TABLE IV
SEASONAL VARIATION IN RETAIL SALES (Figure 25, p. 64)
(Average month = 100)

Kind of Store	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Department stores.....	87	77	100	104	103	100	75	78	91	112	113	160
Mail-order houses.....	99	91	115	100	87	84	74	77	97	128	126	122
Grocery chains.....	100	95	106	101	98	96	98	97	97	105	102	105
5-and-10-cent chains.....	72	75	95	95	95	96	92	96	94	108	104	181
Dyeing chains.....	97	91	100	98	98	98	101	100	99	102	94	122
Cigar chains.....	88	86	96	96	101	96	99	97	99	107	100	135
Shoe chains.....	75	68	96	121	116	106	95	79	92	113	110	129
Music chains.....	84	85	93	86	82	78	75	88	102	119	121	187
Candy chains.....	84	85	96	102	97	92	98	101	100	103	95	147

TABLE V

TREND OF RETAIL SALES BY LINES

(Corrected for seasonal variation. Average monthly sales 1919 = 100)

Year and Month	Department Stores	Mail-Order Houses	Chain Stores					
			Grocery	5 and 10 cent	Drug	Cigar	Shoe	Music
1919								
January	92	87	80	96	95	85	92	78
February	93	80	91	95	91	90	90	92
March	90	72	90	95	90	97	81	97
April	98	91	93	98	97	96	91	101
May	96	94	98	100	96	101	91	99
June	96	89	94	94	95	96	89	97
July	104	103	103	96	100	99	93	102
August	101	107	102	99	102	103	129	99
September	105	106	103	99	100	97	115	104
October	105	121	112	101	103	103	110	112
November	106	118	111	110	111	115	115	105
December	108	120	114	111	110	110	105	103
1920								
January	121	121	132	120	119	122	121	113
February	116	134	134	112	119	124	113	129
March	122	113	138	119	118	125	120	122
April	117	107	153	118	114	128	111	130
May	123	105	154	119	120	134	123	112
June	122	104	156	120	121	130	119	120
July	126	109	163	124	124	139	128	124
August	121	105	147	118	122	133	119	116
September	120	94	148	121	123	138	118	106
October	118	81	130	122	123	142	125	106
November	122	100	130	123	123	133	121	109
December	114	80	133	121	124	133	116	96
1921								
January	117	70	128	119	122	137	118	94
February	117	71	129	123	130	122	93	140
March	117	82	125	128	126	137	142	88
April	110	77	124	117	127	140	113	88
May	110	70	121	116	124	128	114	70
June	114	70	124	118	125	134	117	76
July	107	67	124	117	123	130	100	74
August	108	74	131	121	131	131	104	81
September	106	75	130	121	192	130	105	81
October	110	68	136	131	123	150	114	83
November	107	68	138	128	124	124	105	88
December	108	66	146	133	121	148	111	92
1922								
January	102	66	141	130	121	126	110	86
February	104	65	141	134	126	128	118	88
March	102	72	144	124	124	129	103	87
April	109	77	144	141	124	130	125	92
May	112	81	145	134	127	127	107	98
June	111	82	149	136	127	129	113	104
July	107	79	140	137	125	129	110	111
August	113	75	154	136	129	131	107	113
September	117	78	159	144	130	137	126	116
October	116	85	155	144	131	119	107	100
November	117	88	166	145	131	126	111	100
December	117	89	169	154	133	132	126	109
1923								
January	114	89	171	160	133	132	114	113
February	116	92	177	156	138	128	106	104
March	124	98	190	171	145	140	151	104
April	115	102	177	149	138	130	104	113
May	125	113	189	160	145	135	124	121
June	127	103	186	167	152	142	136	124
July	120	100	185	155	130	129	107	110
August	129	96	188	160	145	130	121	117
September	123	95	192	161	144	142	138	100
October	132	105	194	167	149	130	123	114
November	126	97	200	169	150	133	119	123
December	125	97	193	183	152	142	132	114

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TABLE VI

TREND OF DEPARTMENT STORE SALES, BY FEDERAL
RESERVE DISTRICTS

(Corrected for seasonal variation. Average monthly sales 1919 = 100)

Year and Month	Boston District	New York District	Philadelphia District	Cleveland District	Richmond District	Atlanta District	Chicago District	Minneapolis District	Dallas District	San Francisco District
1919										
January..	86	84	96	87	93	100	102	106	92	84
February..	92	88	97	80	93	94	101	105	90	88
March..	87	88	85	85	94	95	101	104	94	87
April.....	95	97	104	98	104	96	101	103	94	96
May.....	97	96	88	96	98	92	100	102	96	92
June..	93	95	91	96	94	97	98	101	94	96
July.....	105	105	106	106	103	110	100	102	100	104
August....	104	103	102	108	97	97	100	99	97	100
September.	103	110	103	107	108	106	99	97	106	108
October..	109	110	105	106	102	95	101	96	104	110
November..	109	110	109	104	103	100	95	105	108	108
December..	112	111	108	110	104	110	99	96	113	114
1920										
January...	118	121	115	121	110	122	127	119	121	125
February...	111	112	119	114	107	117	127	114	117	118
March...	120	120	114	128	115	120	127	115	124	120
April.....	114	112	117	116	105	119	126	107	123	120
May.....	117	126	132	129	109	121	125	112	125	121
June...	119	123	124	131	114	120	124	114	122	121
July.....	123	127	128	130	119	123	123	119	126	125
August....	115	120	117	136	118	123	121	109	126	121
September.	118	117	117	138	116	120	120	111	119	123
October..	111	115	117	125	115	110	120	107	120	120
November..	123	124	119	135	118	118	120	111	121	121
December..	111	113	111	121	109	113	119	109	110	119
1921										
January...	120	117	116	130	114	111	114	110	107	121
February...	118	115	117	127	115	116	113	110	111	124
March...	122	117	117	128	110	116	113	109	105	118
April.....	111	111	115	116	103	106	112	109	102	114
May.....	111	111	109	117	104	100	111	104	105	114
June...	115	115	111	125	108	101	111	103	103	114
July.....	108	111	109	126	104	96	110	100	99	112
August....	110	113	115	106	106	95	109	101	98	116
September.	106	105	106	101	96	93	109	97	93	115
October..	115	117	113	110	107	104	108	97	101	114
November..	114	114	108	105	102	95	107	96	91	114
December..	117	116	114	103	95	105	94	91	95	115
1922										
January...	111	108	104	96	94	91	106	92	87	112
February...	115	110	109	103	98	97	101	93	89	110
March...	112	105	118	104	99	87	97	92	85	112
April.....	120	114	105	114	101	94	113	103	91	114
May.....	117	115	112	115	101	92	114	101	98	133
June....	117	116	112	116	99	92	116	96	93	119
July.....	115	116	106	116	96	90	113	95	90	116
August....	119	119	118	116	101	94	110	102	95	123
September.	126	122	123	120	104	97	124	102	102	120
October..	123	123	120	122	107	98	117	102	92	127
November..	125	123	119	120	106	98	122	97	92	132
December..	123	122	122	121	107	99	122	108	91	130
1923										
January...	117	118	118	114	104	101	120	102	94	128
February...	126	113	123	122	100	103	120	103	92	134
March...	128	122	145	138	113	108	127	108	93	130
April.....	121	116	103	124	96	97	129	110	92	128
May.....	126	126	125	138	109	102	130	111	108	146
June....	129	129	130	142	110	108	139	107	93	135
July.....	126	121	120	128	112	100	125	96	93	140
August....	132	132	129	139	115	103	144	107	97	140
September.	126	127	120	133	103	102	134	102	103	134
October..	129	134	129	143	110	114	140	105	110	147
November..	134	131	132	133	108	104	133	102	98	144
December..	131	129	130	131	109	103	138	106	97	150

PROBLEMS IN BUSINESS ECONOMICS

TABLE VII
STOCKS IN RETAIL TRADE
(Corrected for seasonal variations)

Year and Month	Index for United States	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	Minneapolis	Dallas	San Francisco
1919											
January . . .	95	90	89	112	93	95	93	103	91	92	89
February . . .	92	89	89	104	92	89	90	95	94	90	89
March . . .	90	90	87	99	89	93	92	89	94	96	88
April . . .	94	90	88	98	90	88	100	109	95	95	88
May . . .	93	91	89	95	91	85	87	101	102	101	89
June . . .	92	91	91	96	93	89	92	89	92	101	91
July . . .	97	97	99	96	98	97	94	92	107	95	98
August . . .	102	104	106	93	104	107	101	101	96	103	105
September . . .	106	107	104	99	109	110	103	102	98	104	111
October . . .	109	114	113	100	110	112	109	104	105	108	115
November . . .	111	115	115	101	111	116	115	107	106	107	114
December . . .	116	118	122	110	117	119	120	111	111	110	121
1920											
January . . .	128	117	129	123	122	131	123	147	116	126	123
February . . .	133	123	125	121	122	124	121	145	119	133	123
March . . .	126	127	129	123	127	141	129	146	120	133	127
April . . .	138	131	140	124	121	140	130	153	122	130	128
May . . .	138	130	138	123	123	141	121	151	121	142	138
June . . .	139	129	139	122	124	139	136	157	121	142	138
July . . .	141	128	141	123	145	147	143	157	121	160	135
August . . .	141	131	143	122	147	138	141	158	121	159	131
September . . .	149	129	140	120	127	133	141	158	120	159	129
October . . .	138	127	136	116	147	129	142	158	118	154	131
November . . .	131	124	127	111	130	122	134	150	114	140	126
December . . .	124	119	122	114	131	114	120	141	107	120	121
1921											
January . . .	113	107	112	104	117	103	112	124	104	117	111
February . . .	113	106	113	106	116	102	113	120	95	118	111
March . . .	112	106	112	105	116	98	113	125	96	117	111
April . . .	113	106	114	105	119	104	115	121	95	118	113
May . . .	114	107	116	108	118	105	116	123	95	113	115
June . . .	115	107	116	120	118	105	112	125	97	116	116
July . . .	110	108	115	123	118	105	112	120	98	115	117
August . . .	116	107	115	127	118	107	113	124	100	116	121
September . . .	117	107	115	128	117	109	115	124	102	117	121
October . . .	117	107	116	127	116	108	116	125	102	115	118
November . . .	117	111	116	130	116	110	115	124	102	120	120
December . . .	110	112	116	126	115	108	114	124	103	117	116
1922											
January . . .	115	113	116	123	111	107	113	120	99	115	121
February . . .	117	115	115	122	113	110	128	128	98	115	121
March . . .	110	115	118	123	114	105	117	130	98	115	123
April . . .	117	113	117	135	114	108	115	121	95	115	123
May . . .	117	115	117	135	112	108	116	123	96	109	118
June . . .	115	113	117	131	110	110	110	122	97	105	116
July . . .	114	115	114	120	108	107	109	121	94	107	116
August . . .	113	114	113	132	106	107	109	121	94	105	113
September . . .	113	116	113	131	107	107	108	122	97	103	114
October . . .	114	116	113	133	108	113	107	122	98	105	113
November . . .	116	119	117	133	110	112	110	124	101	107	117
December . . .	118	119	117	127	112	116	112	124	100	111	122
1923											
January . . .	120	117	118	130	119	118	117	128	106	113	119
February . . .	126	118	118	144	121	121	115	149	105	114	127
March . . .	127	120	120	146	120	117	119	152	110	115	127
April . . .	129	122	123	152	125	123	120	143	110	120	132
May . . .	130	123	126	153	126	123	125	146	109	116	130
June . . .	128	121	123	147	124	121	119	144	109	115	131
July . . .	127	117	121	146	126	121	118	143	108	115	129
August . . .	129	121	123	154	122	125	120	152	108	114	129
September . . .	129	122	123	154	126	110	119	153	109	111	130
October . . .	131	127	129	158	130	122	118	147	109	115	131
November . . .	133	128	128	159	132	126	119	154	110	117	134
December . . .	133	129	128	148	130	126	118	153	109	129	135

D. PRODUCTION

TABLE I
ADJUSTED INDEXES OF THE VOLUME OF MANUFACTURE AND MINING
(Normal = 100)

Month	MANUFACTURE					MINING				
	All Lines Com- bined Index	All Basic Mat- erials Index	Pig Iron Pro- duced	All Con- struction Goods Index	IRON AND STEEL Group Index	All Minerals	Fuels Group	Bitum- inous Coal	Petroleum	Metal's Group	Non- Ferrous Metals
1919	110	109	127	103	130	133	96	94	115	122
	102	99	219	96	118	91	87	85	92	104
	108	92	112	103	106	100	84	83	90	85
	99	95	91	108	96	100	91	92	91	80
	94	87	75	110	78	82	91	93	90	87
	93	81	100	100	89	97	92	93	93	83
	100	93	93	100	102	112	103	104	106	97
	105	103	107	110	116	95	100	100	100	108
	105	95	111	95	90	104	105	103	103	103
	98	93	66	115	64	62	108	112	100	109
	101	98	90	109	85	80	78	70	83	91
	107	105	98	113	100	101	92	83	99	95
1920	117	113	113	118	124	106	109	102	105	108
	115	118	105	120	121	104	103	104	104	102
	114	115	105	107	122	124	105	113	90	101
	113	115	120	101	106	114	100	103	90	101
	104	109	99	101	112	112	95	95	101	100
	105	105	106	104	103	119	99	95	90	100
	107	107	113	103	120	126	105	109	102	104
	104	103	114	101	118	122	105	107	102	103
	102	101	115	96	120	124	117	110	105	97
	100	101	116	92	122	120	100	111	102	104
	96	93	116	88	114	118	105	107	115	96
	92	80	108	89	103	98	108	110	106	92
	86	81	98	85	98	113	113	118	106	85

TABLE I (continued)

Month	MINING									
	MANUFACTURE					PETROLEUM				
	ALL LINES COM- BINED Index	ALL BASIC MATERIALS Index	ALL IRON PRO- duced	ALL CON- SUMPTION GOODS Index	IRON AND STEEL GROUP Index	ALL MINERALS	Fuels Group	Bitu- minous Coal	Petroleum	Metals Group
1921	January.....	84	75	88	83	87	86	93	96	104
	February.....	84	78	77	74	70	90	94	87	83
	March.....	76	79	53	93	48	84	87	72	101
	April.....	74	69	41	96	46	81	92	78	103
	May.....	72	68	40	91	44	49	75	92	104
	June.....	74	79	40	94	41	42	76	92	105
	July.....	73	66	33	106	36	38	72	86	103
	August.....	78	73	34	106	40	45	74	88	100
	September.....	79	76	37	104	40	44	73	85	102
	October.....	80	77	41	103	46	51	76	89	90
	November.....	81	86	51	93	52	54	75	89	97
	December.....	83	90	58	89	58	58	72	83	105
1922	January.....	83	86	59	93	60	61	78	93	80
	February.....	89	89	65	101	66	68	88	104	100
	March.....	92	90	67	107	72	76	96	112	107
	April.....	91	89	71	103	84	97	100	112	109
	May.....	95	94	77	106	89	101	101	112	112
	June.....	99	99	84	106	92	101	107	112	117
	July.....	100	97	86	109	93	100	104	116	117
	August.....	95	95	64	111	74	83	72	106	106
	September.....	97	97	72	109	80	87	87	105	105
	October.....	103	101	88	109	92	95	95	108	108
	November.....	102	111	100	111	98	97	100	102	111
	December.....	108	112	107	104	107	107	103	106	97
1923	January.....	110	110	112	101	118	124	106	111	118
	February.....	109	113	110	105	112	113	104	108	111
	March.....	117	119	116	115	115	115	109	112	114
	April.....	115	118	120	110	125	130	111	114	127
	May.....	117	120	108	131	133	111	113	113	104
	June.....	116*	127	107*	124	122	110	113	101	129
	July.....	116*	128	101*	123	118	113	114	116	132
	August.....	110*	112	117	117	117	114	116	100	103
	September.....	105*	106*	103*	106	103	102	102	101	105
	October.....	107*	107*	104	102	102	100	101	95	107
	November.....	104*	106*	99	104*	94	88	106	106	106
	December.....	106*	101*	99	96	92	102	102	100	109

*Paper production (entering the basic materials index) and newsprint consumption (entering the consumption goods index) omitted.

TABLE II
MONTHLY TONNAGE OF PIG-IRON PRODUCTION, 1885-1902¹
(Unit = 1,000 long tons)

Month	1885	1886	1887	1888	1889	1890
January.....	260	373	503	533	624	711
February.....	282	377	534	459	606	713
March.....	312	377	542	439	611	737
April.....	299	433	551	446	607	736
May.....	299	468	559	472	590	742
June.....	290	481	395	476	555	737
July.....	286	477	433	451	577	716
August.....	290	468	442	477	577	676
September.....	282	451	533	507	585	698
October.....	286	472	568	525	611	729
November.....	303	481	572	564	672	724
December.....	342	490	564	601	685	707
Month	1891	1892	1893	1894	1895	1896
January.....	681	776	724	420	720	885
February.....	594	772	711	445	694	841
March.....	546	798	737	468	672	807
April.....	460	768	746	542	676	798
May.....	468	737	759	468	668	811
June.....	603	711	729	264	672	776
July.....	703	698	642	364	733	763
August.....	698	646	446	494	772	663
September.....	698	624	347	637	833	542
October.....	737	655	303	642	863	468
November.....	772	711	334	694	928	525
December.....	781	733	416	720	928	603
Month	1897	1898	1899	1900	1901	1902
January.....	676	967	1037	1254	1063	1275
February.....	694	980	1019	1267	1215	1419
March.....	724	1002	980	1249	1245	1380
April.....	737	998	1054	1232	1262	1445
May.....	733	998	1071	1254	1284	1475
June.....	724	959	1089	1262	1340	1471
July.....	707	924	1122	1202	1327	1505
August.....	707	876	1141	1032	1297	1436
September.....	794	906	1145	980	1280	1432
October.....	854	920	1189	941	1314	1475
November.....	915	976	1228	906	1371	1440
December.....	967	1006	1262	972	1384	1471

¹Computed from the weekly capacity of furnaces in blast at the first of each month by Margaret G. Myers, *Journal of the American Statistical Association*, vol. 18, p. 247. For 1884, figures were computed as follows: January, 329; May, 342; June, 325; August, 312; September, 294; October, 286; November, 294; December, 299.

TABLE III

MONTHLY TONNAGE OF PIG-IRON PRODUCTION, 1903-1923
(Unit = 1,000 long tons)

Month	1903	1904	1905	1906	1907	1908	1909
January	1472	921	1781	2068	2205	1045	1801
February	1390	1205	1597	1904	2045	1077	1703
March	1590	1447	1936	2155	2226	1228	1832
April	1608	1555	1922	2073	2216	1149	1738
May	1713	1534	1936	2098	2295	1165	1880
June	1673	1292	1793	1976	2234	1092	1929
July	1546	1106	1741	2013	2255	1218	2101
August	1571	1167	1843	1926	2250	1348	2246
September	1553	1352	1899	1960	2183	1418	2385
October	1425	1450	2053	2196	2336	1563	2600
November	1039	1486	2014	2187	1828	1577	2547
December	846	1616	2045	2235	1234	1740	2635
Month	1910	1911	1912	1913	1914	1915	1916
January	2608	1759	2057	2795	1885	1601	3185
February	2397	1794	2100	2586	1888	1675	3087
March	2617	2188	2405	2763	2348	2064	3338
April	2483	2065	2375	2752	2270	2116	3228
May	2390	1893	2512	2822	2093	2263	3351
June	2265	1787	2440	2628	1918	2381	3212
July	2148	1793	2410	2560	1958	2563	3226
August	2106	1926	2512	2543	1995	2780	3204
September	2056	1977	2463	2505	1883	2853	3202
October	2093	2102	2689	2546	1778	3125	3509
November	1909	1999	2630	2233	1518	3037	3312
December	1777	2043	2782	1983	1516	3203	3171
Month	1917	1918	1919	1920	1921	1922	1923
January	3151	2412	3302	3015	2402	1644	3230
February	2645	2319	2940	2979	1937	1630	2994
March	3251	3213	3090	3376	1596	2035	3524
April	3335	3288	2478	2740	1193	2072	3550
May	3417	3446	2108	2986	1221	2307	3868
June	3270	3324	2115	3044	1065	2361	3676
July	3342	3421	2429	3067	865	2400	3678
August	3248	3390	2743	3147	954	1816	3449
September	3134	3418	2488	3129	986	2034	3126
October	3303	3487	1864	3293	1247	2638	3149
November	3206	3354	2392	2935	1415	2850	2894
December	2883	3434	2633	2704	1649	3087	2921

TABLE IV
EMPLOYMENT FOR SELECTED INDUSTRIES¹ (Figure 15, p. 49)
SEASONAL VARIATION ELIMINATED
(Average for 1919 = 100%)

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1919	102.5	96.5	96.0	96.5	97.0	98.0	102.5	104.5	103.5	97.0	99.0	103.5
1920	107.5	105.5	107.5	108.0	107.0	107.5	106.0	105.5	103.0	101.5	93.5	86.0
1921	80.5	80.5	80.5	79.0	79.0	77.5	77.0	79.0	79.5	81.5	80.5	80.5
1922	80.0	80.5	79.0	79.0	81.0	83.0	85.0	87.0	87.0	90.5	91.0	93.0
1923	94.5	94.5	96.0	97.0	97.5	97.5	98.0	98.5	96.5	97.0	94.0	91.5

¹Refined, prel. vol. 5, p. 295.

PROBLEMS IN BUSINESS ECONOMICS

E. MONEY AND SECURITY MARKETS

TABLE I

RATES ON PRIME COMMERCIAL PAPER IN NEW YORK,¹ 1866-1922

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1866	7.95	7.75	7.70	7.40	6.55	6.20	6.40	6.10	5.45	5.70	6.85	7.00
1867	7.50	7.40	7.50	7.75	7.00	8.30	7.50	7.30	8.15	10.00	10.10	10.00
1868	7.20	7.00	7.90	8.10	7.20	6.40	7.90	6.70	6.95	7.80	10.15	9.00
1869	8.35	7.80	9.50	10.05	7.60	9.60	10.00	9.65	10.50	10.35	11.70	10.10
1870	8.95	7.50	7.50	7.25	6.05	5.10	6.25	6.95	7.00	7.05	7.15	7.35
1871	8.00	6.45	6.20	6.70	5.40	4.85	4.70	5.20	6.35	9.40	9.00	9.80
1872	9.30	8.20	8.05	8.50	7.25	6.00	6.40	7.55	10.00	11.10	12.35	10.90
1873	9.40	9.15	10.10	10.75	8.20	6.80	6.50	7.20	12.50	17.00	13.85	10.15
1874	7.40	6.00	6.15	6.30	5.60	5.05	5.90	5.45	6.25	5.80	5.60	6.00
1875	5.75	5.20	5.90	5.45	4.55	4.55	4.30	5.00	5.95	6.35	6.45	6.65
1876	6.45	5.85	5.40	5.30	5.10	4.75	3.80	3.60	4.75	5.65	5.50	5.85
1877	5.55	4.50	4.45	4.45	4.00	4.05	4.25	5.70	6.40	7.25	6.30	5.60
1878	5.85	5.35	5.15	5.35	4.45	3.80	3.60	3.80	4.60	5.45	5.15	5.05
1879	4.30	3.80	5.05	5.45	4.45	4.25	3.90	5.55	5.80	5.90	6.25	5.95
1880	5.45	5.25	5.50	5.50	5.20	4.55	4.45	5.05	5.25	5.10	5.50	6.00
1881	5.25	5.35	5.55	5.19	4.00	3.50	4.00	4.95	5.69	6.25	6.25	6.25
1882	5.60	5.02	5.62	5.06	4.85	5.10	4.62	5.65	6.75	6.65	6.50	5.88
1883	5.50	5.08	5.38	5.81	5.35	4.75	4.80	5.69	6.00	6.00	5.69	5.50
1884	4.05	4.75	4.62	4.72	5.00	5.75	5.95	5.50	5.50	5.10	5.19	5.00
1885	4.00	4.50	4.45	3.94	3.60	3.55	3.50	3.60	3.75	4.00	4.44	4.50
1886	4.31	3.91	3.88	4.25	4.00	3.85	3.94	5.25	5.81	6.06	5.00	6.00
1887	5.50	4.50	5.35	5.38	5.20	5.12	5.10	5.35	6.94	6.38	5.80	6.00
1888	5.50	4.81	5.12	5.41	4.82	4.25	4.10	4.38	5.28	5.08	4.75	4.97
1889	4.05	4.25	4.50	4.35	3.84	3.88	4.40	5.16	5.28	6.00	6.00	6.00
1890	5.15	5.00	5.30	5.10	5.00	5.00	5.05	5.59	5.75	5.90	7.50	7.30
1891	5.69	5.00	5.25	5.08	5.38	5.50	5.60	5.75	5.80	5.53	5.06	4.82
1892	4.16	3.69	3.98	3.47	3.16	2.90	3.47	4.00	4.75	5.10	5.12	5.62
1893	5.09	4.97	6.80	5.75	6.65	6.75	6.75	6.75	6.25	5.91	4.36	3.66
1894	3.50	2.55	3.00	3.09	2.92	2.91	3.00	3.08	3.28	2.75	2.81	2.88
1895	3.10	3.02	3.01	3.97	2.78	2.63	2.95	3.53	4.03	4.78	4.12	4.75
1896	6.00	5.81	5.22	5.28	4.53	4.25	5.05	7.81	8.35	8.56	5.34	3.72
1897	3.32	3.00	3.35	3.53	3.53	3.12	3.44	3.72	4.10	4.19	3.38	3.42
1898	3.25	3.13	4.05	5.75	4.52	3.22	3.00	3.68	4.12	3.41	3.30	3.03
1899	2.90	3.12	3.91	3.09	3.60	3.31	3.06	4.35	4.94	5.20	5.44	5.88
1900	4.90	4.41	4.88	4.85	3.50	3.69	4.05	4.10	4.34	5.05	4.41	4.75
1901	4.03	3.69	3.75	3.08	3.97	3.94	4.30	4.50	4.94	4.65	4.72	4.95
1902	4.44	4.00	4.34	4.48	4.53	4.44	4.62	4.84	5.65	5.94	5.75	6.00
1903	5.12	4.84	5.53	5.19	4.75	5.10	5.47	5.94	6.00	5.84	5.97	5.85
1904	4.91	4.78	4.68	4.06	3.93	3.56	3.53	3.88	4.31	4.41	4.12	4.28
1905	3.95	3.84	3.93	3.07	3.98	3.75	4.13	4.20	4.72	4.95	5.00	5.81
1906	5.05	5.03	5.28	5.44	5.33	5.25	5.48	6.00	6.56	6.36	6.25	6.25
1907	6.15	5.94	6.19	5.92	5.44	5.44	5.75	6.25	6.81	7.06	7.50	8.00
1908	6.28	5.06	5.63	4.38	3.94	3.05	3.75	3.59	3.92	4.06	4.03	3.85
1909	3.72	3.53	3.50	3.50	3.44	3.25	3.38	4.02	4.22	5.03	5.08	5.00
1910	4.75	4.44	4.50	4.75	4.75	4.81	5.38	5.43	5.53	5.50	5.50	4.66
1911	3.98	4.09	3.88	3.66	3.63	3.60	3.78	4.19	4.53	4.35	3.91	4.63
1912	3.90	3.75	4.19	4.15	4.19	4.00	4.53	5.00	5.56	5.92	5.72	6.00
1913	4.66	4.01	5.75	5.53	5.34	5.88	6.06	6.00	5.78	5.65	5.50	5.68
1914	4.53	3.84	3.82	3.75	3.88	3.88	4.50	6.34	6.70	6.44	5.50	4.35
1915	3.84	3.75	3.38	3.06	3.72	3.65	3.25	3.53	3.25	3.22	2.98	3.13
1916	3.13	3.13	3.13	3.13	3.13	3.63	3.97	3.73	3.38	3.38	3.50	3.91
1917	3.55	4.09	4.13	4.28	4.83	5.00	4.68	4.81	5.19	5.35	5.44	5.50
1918	5.58	5.69	5.88	5.00	5.88	5.88	5.88	5.94	6.00	5.97	5.97	5.78
1919	5.19	5.19	5.38	5.38	5.38	5.53	5.42	5.38	5.38	5.38	5.50	5.88
1920	6.00	6.41	6.68	6.81	7.16	7.72	7.84	8.00	7.97	8.00	7.92	7.88
1921	7.81	7.75	7.62	7.56	6.92	6.60	6.28	5.95	5.91	5.65	5.78	5.12
1922	4.90	4.88	4.78	4.50	4.28	4.03	3.94	3.88	4.19	4.40	4.63	4.68
1923	4.40	4.62	5.03	5.12	5.12	4.88	4.94	5.02	5.12	5.12	5.09	4.88

¹For explanatory notes on the methods of calculating seasonal indexes from these data see "Cycles of Rates on Commercial Paper," by W. L. Crum, from which this table is reprinted, *Review*, prel. vol. 5, pp. 28-29.

TABLE II
INTEREST RATES ON TEN RAILROAD BONDS¹
(Figures 31a and b, pp. 78-79)
(Unit = 1%)

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1890	4.62	4.65	4.67	4.64	4.63	4.65	4.68	4.73	4.76	4.76	4.88	4.96
1891	4.83	4.81	4.86	4.84	4.87	4.93	4.93	4.84	4.84	4.82	4.80	4.73
1892	4.66	4.64	4.65	4.63	4.59	4.59	4.62	4.63	4.67	4.65	4.66	4.69
1893	4.64	4.60	4.64	4.64	4.71	4.78	4.93	5.07	4.89	4.80	4.67	4.65
1894	4.68	4.64	4.59	4.55	4.56	4.59	4.62	4.60	4.57	4.55	4.53	4.56
1895	4.58	4.64	4.63	4.58	4.49	4.41	4.39	4.36	4.35	4.38	4.42	4.49
1896	4.53	4.46	4.46	4.46	4.44	4.45	4.59	4.75	4.67	4.65	4.50	4.46
1897	4.44	4.42	4.43	4.45	4.44	4.39	4.34	4.34	4.34	4.36	4.31	4.26
1898	4.20	4.18	4.30	4.40	4.29	4.21	4.18	4.16	4.18	4.17	4.13	4.09
1899	4.02	3.99	3.99	3.95	3.92	3.89	3.90	3.90	3.94	3.98	3.98	4.03
1900	4.01	3.95	3.94	3.91	3.94	3.97	3.97	3.97	3.96	3.96	3.91	3.86
1901	3.83	3.79	3.75	3.77	3.79	3.78	3.80	3.81	3.82	3.81	3.79	3.98
1902	3.76	3.75	3.74	3.72	3.72	3.74	3.75	3.78	3.80	3.82	3.82	3.85
1903	3.84	3.85	3.91	3.95	3.93	3.98	4.01	4.07	4.06	4.00	3.98	3.98
1904	3.96	3.97	3.99	3.96	3.95	3.95	3.90	3.89	3.89	3.87	3.85	3.85
1905	3.83	3.81	3.82	3.82	3.82	3.82	3.81	3.80	3.82	3.83	3.83	3.86
1906	3.85	3.86	3.90	3.92	3.93	3.94	3.95	3.98	3.99	3.98	3.98	4.00
1907	4.01	4.03	4.12	4.13	4.13	4.18	4.18	4.23	4.27	4.37	4.53	4.44
1908	4.26	4.24	4.27	4.22	4.18	4.19	4.19	4.13	4.11	4.09	4.05	4.02
1909	3.99	3.97	3.97	3.97	4.00	3.99	4.00	4.02	4.03	4.06	4.05	
1910	4.06	4.07	4.10	4.13	4.16	4.18	4.20	4.19	4.13	4.12	4.14	4.15
1911	4.12	4.12	4.13	4.11	4.09	4.08	4.08	4.07	4.08	4.10	4.07	4.07
1912	4.04	4.02	4.03	4.02	4.02	4.04	4.04	4.03	4.07	4.08	4.06	4.05
1913	4.03	4.04	4.05	4.11	4.19	4.22	4.21	4.17	4.13	4.13	4.17	4.16
1914	4.10	4.02	4.02	4.01	4.01	4.01	4.04	4.07	4.07	4.07	4.23	4.22
1915	4.17	4.15	4.16	4.14	4.16	4.19	4.26	4.28	4.28	4.19	4.10	4.07
1916	4.06	4.05	4.06	4.07	4.06	4.06	4.09	4.12	4.11	4.06	4.04	4.06
1917	3.99	4.05	4.10	4.18	4.27	4.37	4.45	4.50	4.58	4.59	4.72	4.84
1918	4.82	4.83	4.88	4.93	4.85	4.93	4.98	5.02	5.06	4.94	4.57	4.64
1919	4.84	4.87	4.89	4.94	4.92	4.93	4.98	5.06	5.11	5.01	5.12	5.14
1920	5.12	5.26	5.28	5.48	5.66	5.62	5.55	5.38	5.29	5.16	5.21	5.36
1921	5.19	5.23	5.28	5.30	5.34	5.46	5.34	5.25	5.21	5.20	5.00	4.81
1922	4.72	4.73	4.72	4.64	4.62	4.61	4.52	4.47	4.46	4.57	4.65	4.65
1923	4.62	4.68	4.79	4.79	4.76	4.71	4.76	4.74	4.77	4.81	4.78	4.82

¹Source of data: January, 1890—December, 1910, *Review*, prel. vol. 1, pp. 90-91; January 1911—June, 1923, prel. vol. 5, p. 216; June—December, 1923, *Monthly Statistical Survey*, Harvard Economic Service.

TABLE III
INDUSTRIAL STOCK PRICES¹
(Monthly averages; Unit = \$1)

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1897	41.9	41.4	40.7	39.5	39.4	42.3	45.8	51.8	53.4	50.6	47.4	49.0
1898	49.4	47.5	44.8	44.8	50.5	52.3	53.3	57.8	57.0	53.5	55.8	54.3
1899	62.7	64.8	70.3	75.0	71.8	70.8	72.2	75.0	75.0	73.0	74.5	67.0
1900	65.7	65.9	63.6	63.4	59.0	56.5	57.3	58.0	55.8	57.7	64.2	67.5
1901	67.6	68.9	68.6	73.4	71.7	77.2	73.3	71.5	69.8	64.8	65.5	63.2
1902	63.9	65.1	66.2	67.2	65.9	65.0	65.8	66.1	66.0	65.2	63.2	62.0
1903	65.3	66.6	64.5	62.7	62.2	58.3	54.0	50.7	49.0	44.9	43.9	46.9
1904	48.8	47.9	47.8	49.3	48.1	48.8	51.2	53.7	56.3	61.1	68.1	69.5
1905	70.1	73.6	78.0	80.0	74.7	75.2	79.6	81.7	80.3	82.3	85.4	93.1
1906	98.7	97.8	95.0	93.5	90.1	91.1	88.8	93.9	94.7	94.8	93.9	94.4
1907	93.6	91.6	82.8	83.1	81.2	78.9	80.7	74.1	70.6	62.6	55.8	59.3
1908	62.7	60.4	65.5	68.7	72.5	73.1	76.6	83.0	80.9	81.6	85.7	85.6
1909	85.6	83.3	83.9	85.9	90.3	92.1	94.8	97.8	98.0	98.1	98.2	98.0
1910	94.5	88.2	92.1	89.4	87.2	83.8	77.6	78.8	79.1	83.0	84.2	81.0
1911	83.3	85.2	83.2	82.5	84.5	86.5	85.9	82.2	76.6	76.8	79.8	80.9
1912	81.3	80.9	85.3	88.9	89.1	89.7	89.9	91.0	92.3	92.3	90.8	88.0
1913	85.1	81.2	80.0	80.8	79.2	74.7	77.2	80.0	81.9	79.3	77.2	77.1
1914	80.7	82.3	82.3	79.8	80.5	80.6	76.6	Stock Exchange closed			75.2	
1915	56.6	56.0	58.3	66.4	66.0	68.4	71.9	79.2	85.5	92.4	94.4	97.0
1916	94.7	93.6	93.3	89.8	90.2	90.6	88.5	91.0	97.4	102.1	107.9	98.5
1917	97.2	91.0	94.6	93.9	93.4	97.0	92.9	88.6	83.6	79.0	71.4	70.2
1918	76.6	80.0	78.0	77.6	81.0	80.4	81.8	82.0	82.5	86.2	84.0	82.5
1919	81.6	82.0	87.4	91.0	99.3	105.4	110.0	102.6	107.7	114.0	110.8	105.6
1920	104.6	94.4	99.6	100.8	91.4	91.4	90.6	85.4	87.0	84.9	78.4	71.9
1921	75.1	75.5	75.4	76.7	77.2	69.1	68.5	66.8	70.2	71.3	76.0	79.9
1922	80.9	84.0	87.3	91.7	93.6	93.4	95.2	98.3	99.8	100.4	95.8	97.6
1923	97.9	101.8	104.3	101.5	96.2	93.7	89.3	90.8	90.3	87.7	91.0	94.1

¹Beginning with January, 1915, this is the average of 20 stocks; theretofore, of 12 stocks. For daily figures (both mills and industrials, 1897-1923), see *The Stock Market Barometer*, by W. P. Hamilton, pp. 271-319. Source of data: January, 1897—December, 1914, *Review*, prel. vol. 1, p. 167; thereafter *Wall Street Journal*.

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TABLE IV
RAILROAD STOCK PRICES¹
(Monthly averages; Unit = \$1)

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1897	52.6	52.7	52.0	49.4	49.9	53.4	56.3	61.1	64.8	62.0	59.2	61.8
1898	63.7	63.4	59.6	57.8	63.4	66.2	65.4	68.1	67.5	66.5	69.0	73.1
1899	78.6	83.0	84.0	85.8	86.9	80.4	83.6	84.3	82.9	81.6	82.9	77.8
1900	77.5	79.3	80.1	81.2	78.2	76.5	76.3	77.2	75.7	78.2	84.3	91.1
1901	95.2	98.4	101.4	111.0	110.6	116.0	110.6	108.3	108.1	108.6	113.3	112.4
1902	113.8	114.8	115.0	118.7	119.7	119.9	124.0	126.2	124.9	121.8	117.5	116.0
1903	120.0	117.7	111.7	108.1	103.7	101.8	99.5	94.8	93.4	91.3	92.0	96.6
1904	97.7	94.8	93.9	96.8	94.6	95.8	99.8	103.4	107.0	112.2	116.1	116.5
1905	119.0	123.1	125.4	122.4	117.6	120.0	124.6	128.9	129.8	131.3	130.2	131.6
1906	135.4	132.8	130.6	127.5	124.4	126.2	125.4	133.4	136.5	134.6	134.1	133.0
1907	126.8	120.0	108.2	108.0	105.2	102.3	105.8	100.2	99.1	91.1	84.2	88.6
1908	92.8	88.8	90.6	94.8	101.2	100.2	103.2	107.6	106.8	108.0	114.0	117.6
1909	118.9	116.9	118.7	122.3	124.8	126.6	129.4	131.6	130.2	130.0	128.0	128.2
1910	125.4	121.7	123.6	121.3	120.2	115.5	109.6	112.0	112.5	116.4	115.4	112.9
1911	116.8	118.4	117.2	117.1	119.6	122.4	122.5	117.2	112.0	112.8	117.4	116.6
1912	116.0	115.4	117.6	120.7	120.0	119.6	119.2	122.9	122.3	122.0	121.3	117.8
1913	116.2	112.4	110.4	110.7	108.4	103.0	105.2	106.6	107.4	105.4	103.0	103.4
1914	106.4	107.0	104.5	102.1	102.5	102.0	96.2	Stock Exchange closed				89.8
1915	91.2	89.8	90.6	95.8	93.8	93.0	90.6	93.8	96.2	102.3	106.8	106.4
1916	104.3	102.2	102.2	101.0	104.8	106.6	105.2	105.2	107.2	110.6	109.1	106.3
1917	104.2	97.7	99.4	98.4	93.4	95.0	93.6	91.8	87.4	82.8	76.5	75.4
1918	78.8	80.4	80.9	79.1	82.5	83.1	82.8	84.4	84.7	87.5	89.4	85.9
1919	83.2	82.8	84.3	84.3	88.7	88.1	88.1	80.8	80.2	81.4	79.6	75.2
1920	74.9	72.5	76.8	74.4	72.0	71.1	72.8	74.6	79.2	83.6	80.2	74.2
1921	76.5	74.3	71.2	70.1	72.9	69.2	71.9	72.1	73.2	72.5	74.0	74.4
1922	74.9	77.2	79.0	83.6	84.9	83.6	86.6	90.4	92.1	92.2	86.8	84.9
1923	85.6	89.1	89.1	86.7	82.3	81.9	78.8	78.7	79.0	79.0	80.7	80.7

¹Average price of 10 railroad stocks. Source of data: January, 1903—December, 1919, *Review of Economic Statistics*, prel. vol. 1, p. 169; January, 1920—December, 1923, *Wall Street Journal*.

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